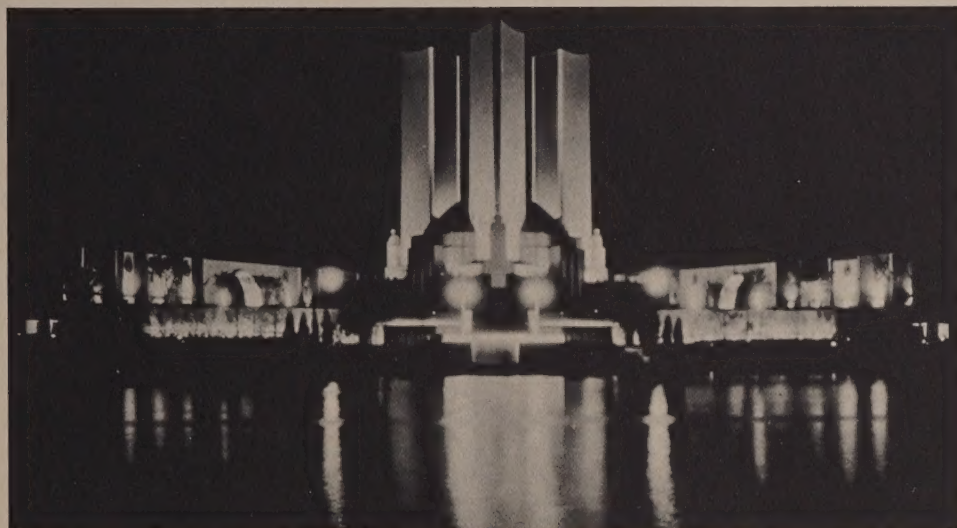


ARCHITECTURE

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*The Federal Building and Hall of States from across the lagoon at night.
Edward H. Bennett and Arthur Brown, Jr., architects*

The Century of Progress Exposition

By Henry H. Saylor

CHICAGO'S effort of 1933 has an outstanding advantage in its basis upon a definite theme—a century of progress. One hundred years ago Chicago consisted of a huddle of log huts crouching in the shadow of Fort Dearborn for protection from the Indians. Chicago's birth and growth as a community, coupled with the dawn and unprecedented development of an era of discovery, invention, and increasing comfort and convenience for mankind, form a theme of dramatic and absorbing interest. That theme is well sustained throughout the vast aggregation of exhibits. Surely never before has there been such a magnificent demonstration of our march up the steps of civilization. One could easily spend a month—two months—roving among the visualizations of this progress, and find something interesting and instructive at every turn. In this respect the Century of Progress International Exposition is an unqualified success.

It was back in 1923 that the idea of an anniversary exposition was first seriously considered. It slumbered and was almost forgotten, but re-

asserted itself late in 1927, and was formally adopted. A corporation, not for profit, was organized. If any surplus funds remain after the Fair is over and paid for, the money goes to the Art Institute, the Rosenwald Fund, and similar institutions serving the public welfare.

Furthermore, unlike other world's fairs, this one sought no subsidy from city, county, State, or Federal Government, and received none. The Chicago World's Fair of 1893 received about \$7,500,000 in public subsidies; Saint Louis' Louisiana Purchase Exposition, \$10,000,000 and a government loan of \$4,600,000; the San Francisco Fair of 1915 received about \$10,000,000 from city, counties, and State.

In the present instance a group of citizens underwrote a bond issue of \$10,000,000, secured by the deposit of forty per cent of the gate receipts. In the years of depression that followed the issue these notes have been through much changing of hands, and have been used for payment of services and materials, but have not sold for less than par. It is to Chicago's everlasting credit that through all the gloom and precarious

uncertainty of recent years her determination to build this Fair and to build it in accordance with, or better than, the original specifications, never wavered. And today, with the attendance running ahead of the estimates, with every hotel full, with the tourist business exceeding all expectations, Chicago is finding that the Fair, instead of being a local burden, is putting the city right out in the forefront of the nation's march back to prosperity.

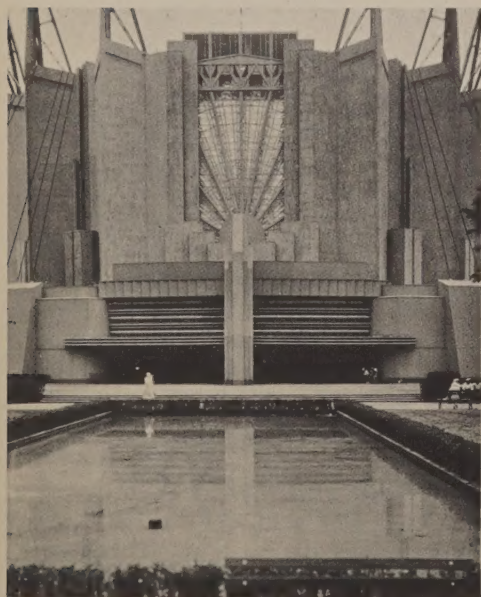
It is now several years since the Exposition authorities delegated the architectural problem to a commission: Harvey W. Corbett, Edward H. Bennett, Hubert Burnham, John A. Holabird, Arthur Brown, Paul P. Cret, Raymond Hood, and Ralph T. Walker. To this original group were later added: Ely Jacques Kahn, the late Ferruccio Vitale, Lee Lawrie, and Joseph Urban.

Throughout the long succession of special problem after special problem, Clarence W. Farrer, assistant director of operations, has held a strategic position on the firing line and has acted as a sort of liaison officer between the architects and the builders. To his initiative and ingenuity is due great credit for the achievement of a huge

task, under many unforeseen difficulties, completed on time. Louis Skidmore and Shepard Vogelgesang rendered invaluable services in coordinating matters of design on the ground, the former in exterior work, the latter in providing a service for the exhibitors which preserved an effective harmony and continuity throughout the interiors.

It is a matter of interest, in passing, that the buildings were erected at a cost of from ten to sixteen cents a cubic foot.

The Century of Progress enjoyed an unusual advantage in its site. An enabling Act of the Illinois legislature permitted the exposition to be built on two hundred twenty-four acres of made park land lying along Lake Michigan. This land, pumped up in recent years out of the lake bottom, is under the jurisdiction of the South Park Commission and not under the city of Chicago. Thus the buildings were unhampered by existing codes, necessarily unfitted to the needs of temporary structures. The problem of building for a safe and active summer life of one hundred fifty days was quite different from that of building for a life of, say, thirty years under both winter and summer conditions.

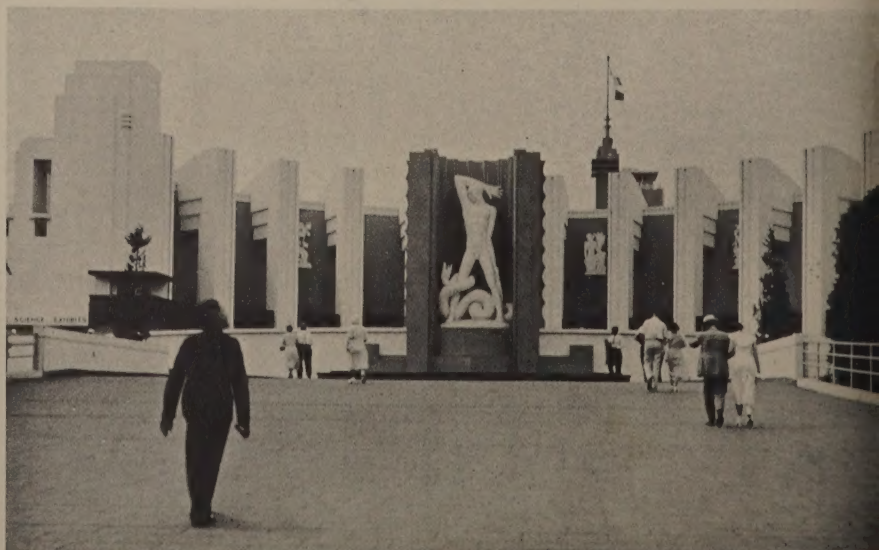


The "breathing dome" of the Travel and Transport Group; the dome is hung from steel posts guyed with steel cables. Edward H. Bennett, Hubert Burnham, John A. Holabird, architects

At right, the tower and court of the Hall of Science. It is here that the Fair is lighted nightly by an impulse from the star Arcturus. Paul P. Cret, architect



Below at left, a bit of one of the popular concessions, The Streets of Paris. Below at right, the north front of Paul P. Cret's Hall of Science



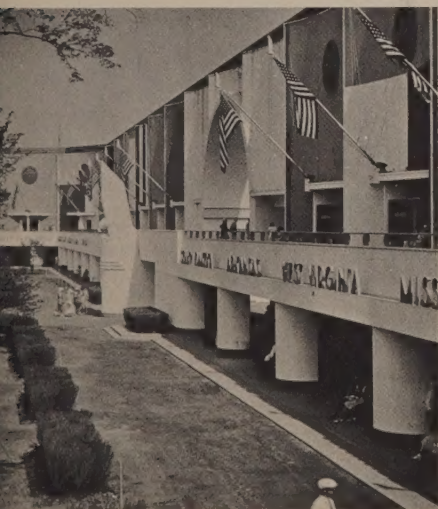
The site, however, also brought its peculiar obligations. The land was to be returned to the Park Commission six months after the Fair closed, unencumbered by buildings. Thus new problems were substituted for old. Ease of dismantling, salvage values and such factors came into the picture. Salvage was at first considered a matter of prime importance, but it has faded into a minor rôle. It soon became evident that the dumping on the market of steel shapes, electric conduit, wall board, in huge quantities would not be a desirable thing, particularly at a time when industry sees some promise of coming once again into normal production. So, most of the materials used have been made for a short life—not the stock materials of the various building industries, but specially designed types that will serve this particular purpose only. The floor of Lake Michigan, therefore, will in all probability welcome next winter a great deal of what is now the Century of Progress International Exposition.

Every one who has visited the Fair will probably tell you, upon request, the best way of seeing it—and the ways will be widely various indeed. My own recipe is to go first at night, pro-

ceed directly to one of the Observation Towers supporting the Skyride, and view the Fair in its painting of lights from far aloft. These towers, ascended by elevators, are almost as high as the tallest skyscraper, and afford a view that will give you a feeling of the plan that is obtained in no other way.

Previous expositions have made much of the "grand plan"—particularly Chicago in 1893. In forsaking the classic building, the architects have here largely forsaken the grand plan as well. One might tramp over the Fair grounds for a week and fail to gain that subconscious sense of where one is and where he is going—that feeling that the grand plan, if well done, instills very quickly.

I freely confess to a total lack of mental plan picture after two days of wandering about in a conscious effort to gain just that thing—but I had not followed the recipe given above. It is somewhat disconcerting, one must admit, in attempting a main-axis tour of the three and a half miles length, to find oneself, without conscious deviation from the straight path, on the second floor of a tire company's exhibit, and facing the necessity of encircling that whole floor



The General Motors Building, in the centre of which is a full working assembly line for the Chevrolet car. Albert Kahn, architect

At left, looking along the interior façade of the Hall of States which frames the Federal Building. Edward H. Bennett and Arthur Brown, Jr., architects

Below, the Avenue of Flags, from in front of the Administration Building, looking toward the Hall of Science. Below at right, a corner inside the Belgian Village—a colorful reproduction in plaster



before getting back to the main axis a story-height below. The fact is that major and minor axes are not strongly in evidence here excepting in respect to individual buildings, upon occasion. It is evident that this avoidance of axial treatment in the design of the whole was no mere oversight on the part of the architects. Probably they came to the conclusion that a definite break with the past in the forms utilized for buildings called for a break as well with axial planning. It seems to me, parenthetically, that such a conclusion is still worth debating: the case is not proven.

There was considerable fanfare, in the early stages of designing the Century of Progress Exposition, as to the desirability of permitting form to follow function. It was pointed out—and the argument carries conviction—that it would be rather absurd to build an enclosure for a historical picture of the development of radio, television, air-conditioning, gas-tube lighting, and the like, and to model that enclosure upon a Greek temple or a Roman bath. The exhibition buildings were to enclose space for the particular purpose of exhibiting the recent progress of science. This progress must necessarily be described in words that would mean little or nothing

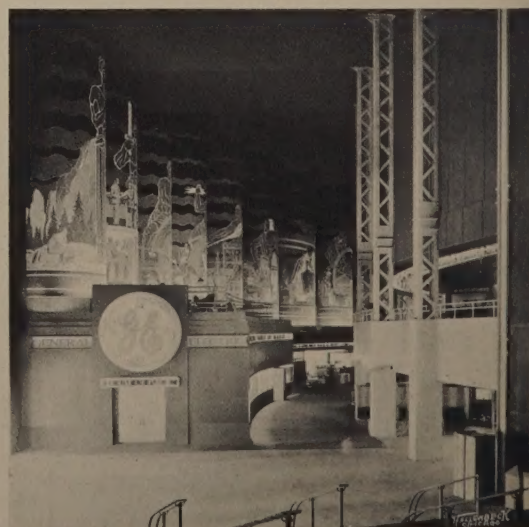
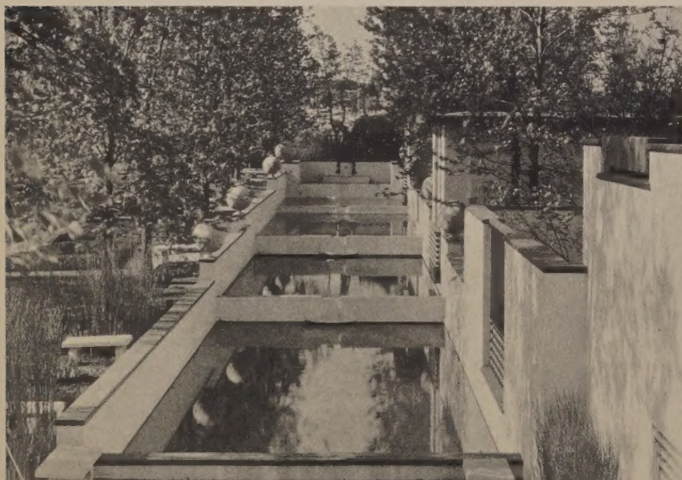
to the Greek priest or to the Roman dilettante; it would surely be logical to utilize our most recently acquired knowledge and skill in construction methods to shelter these records of modern progress. We can control artificial light more easily than daylight, therefore there would be no windows. The buildings must offer no fire risk, must be prefabricated as far as possible to save labor costs, must be weatherproof, particularly against heat. Skeleton steel construction, covered outside with a wall board of asbestos and cement, or sheet steel; covered inside with a similar wall board; and insulated by the wet gun process—all these conclusions justify themselves.

Judging from the final results the function theory was not, in the raw, satisfactory to the designers. Having enclosed the requisite amount of space with walls and roofs, the result lacked something; it lacked a lot—the power to please the eye. Strictly functional form, therefore, seems to have been sunk at this point, without trace. The designers apparently set out to evolve form for form's sake. A dome is hung from "sky-hooks"—where, through a change of exhibits, no dome was required; enormous pylons are raised up to mark a little-used boat landing; great ribs project far above a trussed roof, yet the supporting trusses are inside; enormous verticals mark a concave semi-circular front and buttress radial ribs that need no buttressing; three enormous towers support a dome at knee-height and then enclose vast quantities of unused and unneeded space above.

In "The Garden of Comfort," designed for the American Radiator-Standard Sanitary exhibit by Hood & Fouilhoux, Vitale & Geiffert

Below at left, a view on the main thoroughfare, looking toward the north entrance, with the Shedd Aquarium beyond, outside the grounds

Below, inside the semi-circular portion of the Electrical Building, with an effective mural decoration by C. B. Falls. Hood & Fouilhoux, architects



All of these devices catch and hold the eye; each carries a punch. It is as if a building were saying: "Behold, miserable wretch, what magnificent form I have! Tremble and be properly humble before me as I puff out my cheeks!"

Well, what is the alternative? A return to the World's Columbian Exposition of 1893? A double row of huge packing-boxes in which exhibits are housed? Surely, neither of these. But there are other possibilities. This exposition, like all of its predecessors, accepted the basic idea of individualism in exhibits, in buildings—the heterogeneous grouping, in vast spaces, of loosely classified divisions. It would be interesting to see what could be made of an exposition which unified the whole business, concentrating it in one huge structure—or in a closely related group form. If a building devoted to agriculture, or to social science, or to home-making, cannot in itself be impressive without taking on extraneous and functionless forms, perhaps a closer combination of these subjects would result in the need for a single structure of such size and variety of articulation as to be impressive and interesting without the exaggeration and distortion of architectural forms. The possibilities opened up by some such scheme in the line of comfortable, compact, air-conditioned space, and relief from some of the leg-weariness connected with the traditional use of "magnificent distances," are inviting.

Though the design of the buildings was parcelled out among various architects, the control of the color was entrusted to one man, Joseph

Urban. This task could scarcely have been put into more capable hands, for Urban's fearless use of color is a gift possessed by few men. For the sake of unity and harmony the color could not well have been left to the judgment of the individual architects. Particularly with the vast areas of flat planes resulting from the character of construction employed, color became of primary importance to the Fair as a whole, and a single control seems to have been unavoidable. Nevertheless, it can scarcely have been other than surprise and some disappointment with which the architects first viewed the manner in which their designs were radically altered by the color. Planes obviously designed to count in contrast have been painted into a background; subordinate elements have occasionally been vigorously accented by contrast. It would seem to have been wiser to have Mr. Urban impose a general palette upon each designer, allowing him a free hand in the working out of details.

Mr. Urban's illness prevented his being in Chicago to supervise the application of the color. This task had to be carried out by assistants who conferred with Urban in New York and brought him frequent reports of the progress. It is said that he has a detailed mental

The group of four buildings designed to house General Exhibits. Harvey Wiley Corbett, architect

Below, a detail on the upper level of the Electrical Building, the cascades of light made of neon tubes. Hood & Fouilhoux, architects

Below at right, the Chrysler Building, the design for which was the result of a competition won by the firm of Holabird & Root, architects



picture of the finished result—a picture so complete that a sight of the Exposition itself would bring him no surprises. I wonder.

One's first impression of the color is that it is largely of strong red, blue, and yellow. It is rather surprising to find that Urban used twenty-four colors:—one green, two blue-greens, six blues, two yellows, three reds, four oranges, two grays, with white, black, silver and gold. It is still more surprising to find that twenty per cent of all painted surfaces is white, twenty per cent blue, twenty per cent orange, fifteen per cent black, and the remaining twenty-five per cent divided among the yellows, reds, grays, and green.

With such an extensive use of color outdoors in the summer sunlight, special efforts were made to maintain the color without fading. Lead-and-oil was abandoned for the reason that chalking would start to gray the colors at once. After considerable research and experiment the paint chemists decided upon mineral pigments in a casein base, and it is unlikely that any change of color will be noticeable during the life of the Exposition.

The night lighting is unusually elaborate and effective. With the coming of successive expositions, both here and abroad, the progress of illuminating engineering has gone forward by leaps and bounds. Each new exposition presents an opportunity for daring advances in lighting such as rarely, if ever, occurs in the normal routine of commercial work, and the Century of Progress is surely no exception to this rule. Here, the color in the buildings introduces a comparatively new complica-

tion. The lighting of a vast area of dark blue silhouetted against a night sky offers a problem that staggers even the ingenuity and resources of present-day lighting engineers.

There are several ways in which the Century of Progress Exposition differs radically from previous expositions, but one of the most obvious is in the prevalence of amplified sound. All through the grounds there are concealed or inconspicuous amplifiers broadcasting music from the national radio programs or from some source within the Fair. These amplifiers are rather well distributed and spaced, so that the visitor is rarely out of hearing range of one of them. Although the stations are far enough apart to avoid interference, one occasionally hears a combination of music with its lagging echo, the latter so strong as to suggest another origin. Announcements of special events in the Fair are also broadcast through this system.

It is down the Midway, however, that sound amplification is pushed to the limit. Rival barkers for the sideshows are no longer limited in range by their own powerful vocal cords but rather by the size and power of their amplifiers—with the result that the visitor is being harangued to visit a show so far away that he may not reach it the same day.

To the question, "Is the Fair worth seeing?"

I would answer without hesitation, "Unquestionably!" If one asks, "Is this Exposition likely to have, as did the 1893 Fair, a powerful influence on the future architecture of America?" I would say "Emphatically no!—excepting that it shows so many things we shall want to avoid repeating."

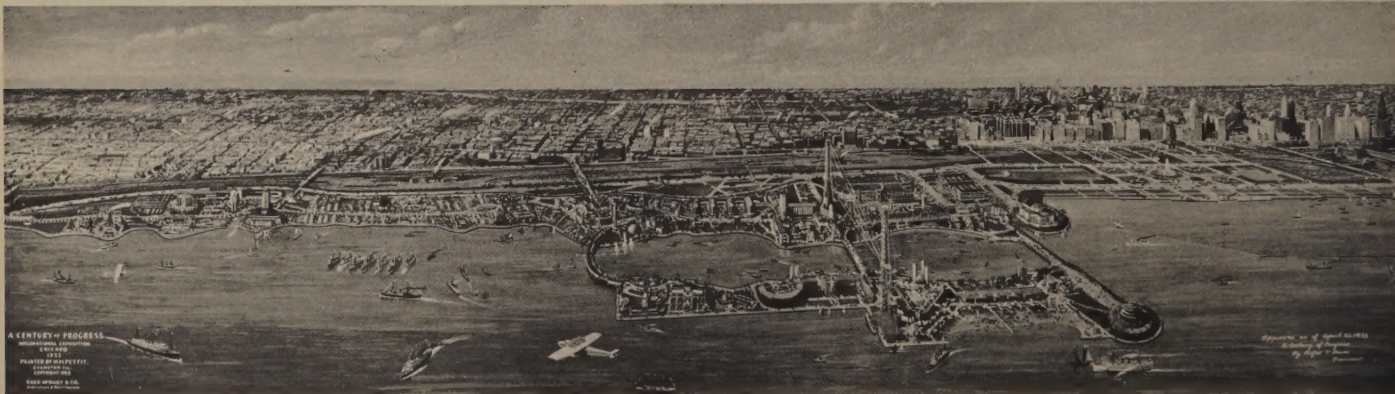


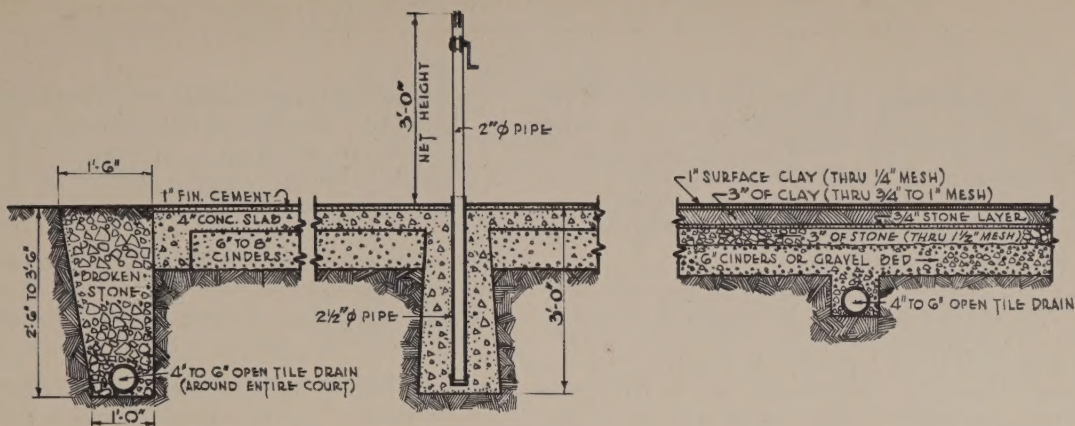
At right, looking down upon the entrance court of the Hall of Science from under the Sky-ride. Across the lagoon at the right is the Electrical Building

Below, a bird's-eye view of the Exposition, from which one gains an idea of its plan and its relation to Lake Michigan, the Adler Planetarium at the right lower corner, and Grant Park just above it

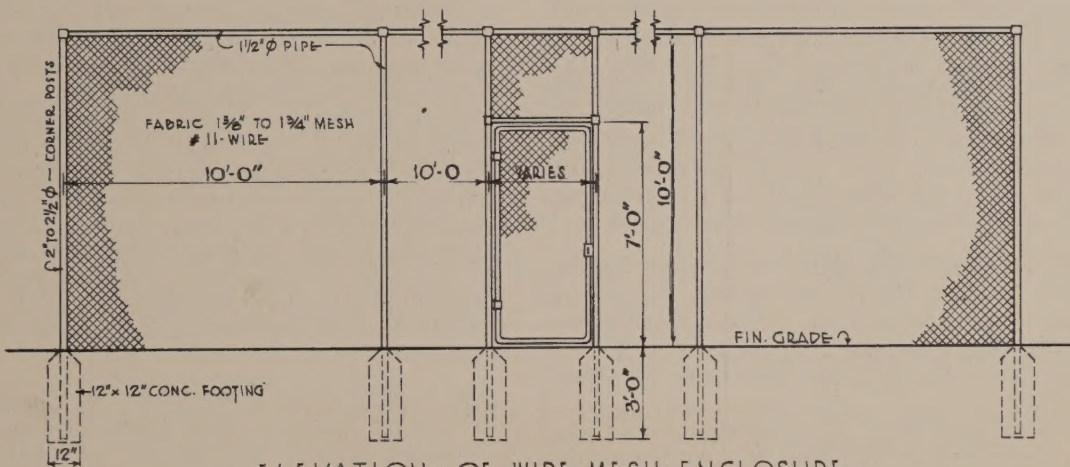
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Painted by H. M. Pettit

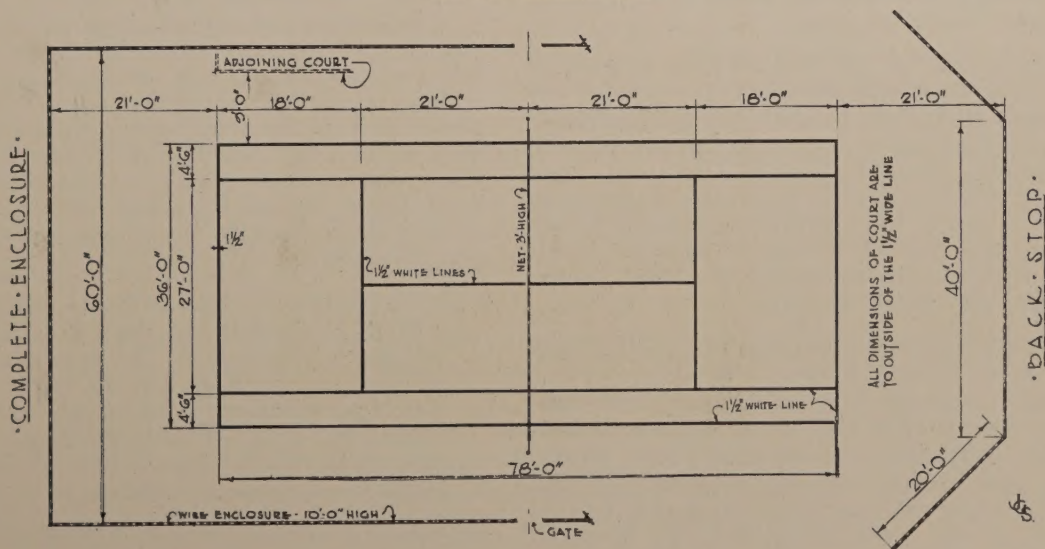




· CEMENT COURT · · CLAY COURT ·
SCALE: 0 3 6 9 12 15 18 21 24 27 30



· ELEVATION OF WIDE-MESH ENCLOSURE ·
SCALE: 0 3 6 9 12 15 18 21 24 27 30



· TENNIS COURT DETAILS ·
A SERIES OF WORKING DRAWINGS BY JACK G. STEWART

BOOK REVIEWS

ARCHITECTURAL PLANNING OF THE AMERICAN COLLEGE. By JENS FREDERICK LARSON and ARCHIE MACINNES PALMER. Foreword by ROBERT L. KELLY. 179 pages, 7½ by 10 inches. Illustrations from photographs, drawings, and plans. New York: 1933: McGraw-Hill Book Company, Inc. \$2.

For four years the Association of American Colleges has maintained an architectural advisory bureau. This book is partly a record of the experiences thus gained, and partly an appraisal, for the guidance of building committees, of the principles involved in campus planning. The book is an outgrowth of that pioneer work, "College Architecture in America," by Charles Z. Klauder and Herbert C. Wise, published in 1929, but is in no sense a substitute for it.

INDUSTRIAL PIPING. A Case Book of Proven Practices and Methods. 286 pages, 5¼ by 8 inches. Illustrations from diagrams. Chicago: 1933: Engineering Publications, Inc. \$3.50.

A compilation of handbook material combined with specific installation records—in other words, not only the technical data, but the results of their specific applications in all phases of piping use.

ANCIENT STAINED AND PAINTED GLASS. By F. SYDNEY EDEN. 214 pages, 5¼ by 7½ inches. Illustrations, six in color, from photographs and drawings. Printed in Great Britain. New York: 1933: The Macmillan Company. \$2.50.

Here is a work which, first published in 1913, has made a definite place for itself. It is not an exhaustive work, but rather one supplying the basis of an intelligent appreciation of stained and painted glass in England, older than 1714.

GENERAL INDEX TO THE FINAL REPORTS OF THE PRESIDENT'S CONFERENCE ON HOME BUILDING AND HOME OWNERSHIP. Prepared under the direction of DAN H. WHEELER. Edited by JOHN M. GRIES and JAMES FORD. 114 pages, 6 by 9 inches. Washington, D. C.: 1933: The President's Conference on Home Building and Home Ownership. \$1.15. Set of eleven volumes complete without Index, \$10.50; with Index, \$11.50.

HARVARD CITY PLANNING STUDIES. TRANSITION ZONING. By ARTHUR C. COMEY. 150 pages, 7 by 9¾ inches. Illustrations from photographs and drawings. Cambridge, Mass.: 1933: Harvard University Press. \$2.50.

The more we practice the comparatively new science of zoning the more we realize that it is an instrument of vast potentialities, not only for good, but for harm. Out of a mass of research concerning existing practices, the author brings clearly into focus the desirability of certain definite regulations that should govern our zoning.

REMODELLING AND ADAPTING THE SMALL HOUSE. By HAROLD DONALDSON EBERLEIN and DONALD GREENE TARPLEY. 163 pages, 7 by 10¼ inches. Illustrations from photographs, plans, and diagrams. Philadelphia: 1933: J. B. Lippincott Co. \$3.50.

A book for the owner, the prospective owner, or the layman who has remodelling aspirations. There is good advice here, yet not so much that it will convince him of his ability to do without an architect.

ROOFTREES, or The Architectural History of an American Family. By PHILIP LIPPINCOTT GOODWIN. 135 pages of text and illustrations and 17 plates, 9 by 12 inches. Illustrations from drawings and photographs. Philadelphia: 1933: J. B. Lippincott Co. \$10.

Here is something entirely new in book making—the architectural history of a family starting back with one Ozias Goodwin, of Braintree, Essex, who migrated to the United States in 1637. The author tells, in words and in drawings and photographs, the kinds of home the pioneers and their descendants lived in from the centre of England's cloth manufacturing country to Connecticut, and its slowly widening circle in which the family dwelt. There is something here that reminds us of Noel Coward's "Cavalcade," in the steady onward march of forms—architectural in this case—surrounding a single family of which the author, an architect, is one of the present members.

ARCHITECTURAL DESIGN. By ERNEST PICKERING. Foreword by REXFORD NEWCOMB. 311 pages, 8½ by 11¼ inches. Illustrations from photographs and drawings. New York: 1933: John Wiley & Sons, Inc. \$6.50.

The author, who is professor of architectural design in the University of Cincinnati, has written a text-book on architectural design which has rare balance in the light of present needs. The Classic Orders are here, but they take their place with forms dictated by steel, concrete, glass, and other materials. The author's concept of teaching architectural design provides for a thorough understanding of the past, an alertness toward the future, and a regard for truth and sincerity.

COMPRESSIVE STRENGTH OF STEEL COLUMNS INCASED IN BRICK WALLS. By ALBERT L. HARRIS, A. H. STANG, and J. W. MCBURNEY. 16 pages, 6 by 9¼ inches. Illustrations from photographs and diagrams. Research Paper No. 520. Pamphlet binding. Washington: 1933: U. S. Department of Commerce, Bureau of Standards. 5 cents.

SUNDIALS. Prepared by R. E. GOULD. 6 pages, 5¾ by 9 inches. Illustrations from diagrams. Circular of the Bureau of Standards, No. 402. Pamphlet binding. Washington: 1933: U. S. Department of Commerce. 5 cents.

Some Pitfalls in Supervision

By *W. F. Bartels*

XXXIV. ELEVATORS

(CONTINUED)

THE prime requisite of an elevator is safety; therefore anything affecting this should be carefully observed by the superintendent.

One of the reasons for securing properly supported rails is that the safety devices grip the rails when the car falls or exceeds the speed limit. In the newer installations a valuable safety device is the so-called "electric eye." This throws a beam of light across the car entrance. If a passenger interrupts this beam it is impossible for the door to close. All improvements and safety devices of this type are indeed commendable and show this branch of the building industry eager to give the public better and safer service.

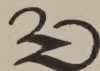
Often during the construction of a building an elevator shaft is pressed into service so that a hod hoist may be used in it temporarily. These hoists seldom fit the rails properly. Instead of operating smoothly, as a passenger car would, they bump from side to side considerably. The result is that soon the rails may be slightly out of alignment and the ends will not meet as well as they did before. Hence the rails should be replumbed and properly filed down again to give smoothness to the travel of the passenger car. In exceptionally tall buildings there is an interesting fact in regard to the elevator rails and their attachment to the steel work. The weight of the building compresses the steel frame-work ever so little in each story, but the total accumulation amounts to several inches. Because of this compression the elevator rails on some of the taller buildings will buckle. Although there is no weight on them, the rails will be bent out of line because they are fastened to the structural steel. When once understood this is easily remedied by cutting out a part of the rail.

The finish of the shaft in which the elevator travels is preferably a smooth material with as little tendency as possible to gather dust. It is advisable that paint be used to bind all minute parts of the shaft masonry, so that dust or sand will not be forthcoming from them. Actually, painting is economy in the long run, although at first this may seem to be extravagant, but every particle of grit that gets on the machine and cables contributes substantially to the wearing out of these parts. Painting the shafts, however,

does not mean that the painter should throw the paint around so that the doors and facias become spattered. When black asphaltum paint is used on the shaft, it is very distressing to

see this splashed on a baked enamel door of some other color.

The bottom of the shaft should be readily accessible so that inspections, repairs, and cleaning may be easily and systematically done. There should be no projecting rough areas at beams and fireproofing, where the electric cables will rub and consequently wear. However, these cables should be so hung from the bottom of the cab that they do not touch any part of the sides of the shaft, and so eliminate the makeshift of padding the beams or parts of the shaft that are too close to the cab, with quilted canvas.



The elevator machines come assembled and are hoisted in place by means of trolley beams especially placed for them. They are generally brought on the job early, which means that they are subject to abuse of many sorts unless steps are taken to protect them. The weather whips in on them because the outer wall of the building is not up. When the floors above are being poured, concrete splashes down. Workmen of other trades throw rubbish on and around them. It obviously is up to the superintendent to secure proper consideration for these expensive machines. They should be well covered by heavy tarpaulins and nothing should be piled on them. All details regarding their foundations should be strictly inspected. The lead pads or other vibration-reducing materials should be properly placed. The anchorage of the elevator machines, when placed in the basement, must be carefully checked. While they must be well secured, there must be no connection with the steel framework, lest the vibration be transmitted to the entire building.

The modern electric elevator is vastly different in respect to speed from the old type hydraulic elevator, which speeded up when carrying a light load but during the rush period of

heavy loads slowed down considerably. The speed of the car should not vary more than permitted by the specification. The range of the car will also be given—as to what distance the cab platform is permitted to stop above or below the floor. Then, too, the clearance between the elevator platform and the door saddle in the shaft should be carefully checked. The building code probably prescribes a minimum and maximum, and care must be exercised to see that it is within these bounds. One danger of having it too wide is that a woman's narrow-heeled shoe may be caught in it.



Up until a few years ago it seemed that direct current gave more satisfactory results in elevator machines, hence motor generators were used to convert alternating current. In large buildings this is still a general practice. The superintendent must see that these machines, particularly if there is more than one, are properly ventilated so that the machines will not get too hot. The motors should of course be "40-degree C. motors"; that is to say, they must not rise more than 40 degrees C. above the room temperature, providing they are not in a small, confined space.

The supporting cables, or "ropes" as they are called by the mechanics, are an important part of elevator installations. They must not only withstand wear but must not wear unevenly on the drums around which they are wrapped. The way the ropes are fastened has a good deal to do with this. The proper way of doing this work should be insisted on by the superintendent: the conical-shaped socket, which is later fastened to the frame of the car, is pulled over the "rope"; then the end of the cable has its strands separated, or "wire-brushed," and the piece of hemp cut out from the centre. While this is being done there is a good opportunity to check up to see that the rope has a well graphited hemp centre. The term "wire brush" is used because of the resemblance of the end of the rope to that article when it is unstranded or picked out. After the rope is unstranded the wires are arranged around the inner edge of the socket and the ends bent back on themselves toward the centre. Then, after they have been thoroughly cleaned, hot metal

is poured in, binding all the wires in the socket and forming a fastening which is very secure. Precaution must be taken in bending the wires to see that some are not pulled unevenly from the strand. If the pull on any one wire is uneven there will be high points on the rope; the weight will be transmitted to the straight part of the cable only, while the shirking projecting strands will wear the drum. It is evident that this uneven wearing on the drum is unfair to the next cable put on, because it will not fit the form on the drum.

The elevator cabs themselves should be carefully checked, both when they are being erected and after they have been completed. They should be turned over to the owner in good condition—not scratched or marred. If they are to be used for hoisting building materials, the cabs should be adequately protected against damage. Where there are two or more cars in a shaft, most codes require an access door in each cab so that the adjoining elevator may be used to take off passengers from the one which may be stalled between floors. It is of course desirable to have this emergency door inconspicuous, since it is seldom used. The inspector must see that there are no gaping cracks surrounding it. If there is a rail it must have smooth joints and a good appearance.



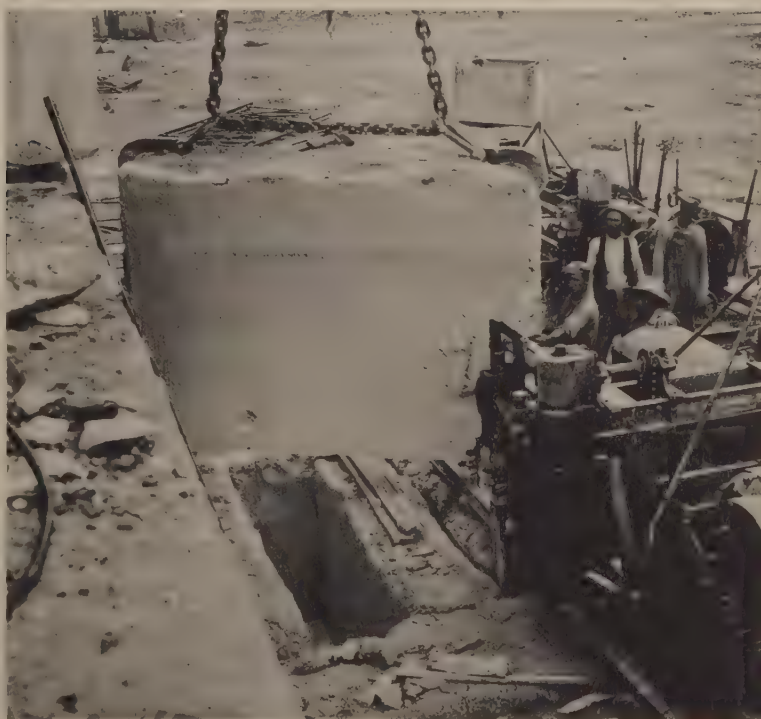
Most city ordinances call for complete and thorough tests of various sorts before the elevator can be put into public service. While the city assumes the responsibility for these tests, it is well for the superintendent to be present. Foremost among the tests are the bumper and the drop tests. The former is made by sending the car down upon the bumper to see that no defects are present in the latter. Sometimes the bumpers will crack, due to flaws, and have to be replaced. The drop test is one in which the car is allowed to drop free just as if the cables had parted. The cab is fully loaded with iron weights to equal the load it will be allowed to carry. The safety device then supposedly grips the rails, stopping the car. After the car has been stopped in its descent, it can then be released only by means of large wrenches and much labor. This does away with any easier means of release which might allow the car to descend before the fault had been remedied.

Quarrying and Fabricating Limestone



A PICTORIAL REVIEW OF THE MAIN OPERATIONS INVOLVED IN BRINGING LIMESTONE FROM THE QUARRY TO THE FINISHED BUILDING, AS PHOTOGRAPHED IN THE PLANTS OF THE INDIANA LIMESTONE COMPANY, BEDFORD, IND.

Oolitic limestone, the technical name for the building stone found in Southern Indiana, lies in a formation having a maximum depth of seventy feet. At the left of the photograph above one sees the "burden" which has first to be removed by "stripping." The stone is then removed by channelling, cutting an average depth of ten feet. Each cut is called a "floor"



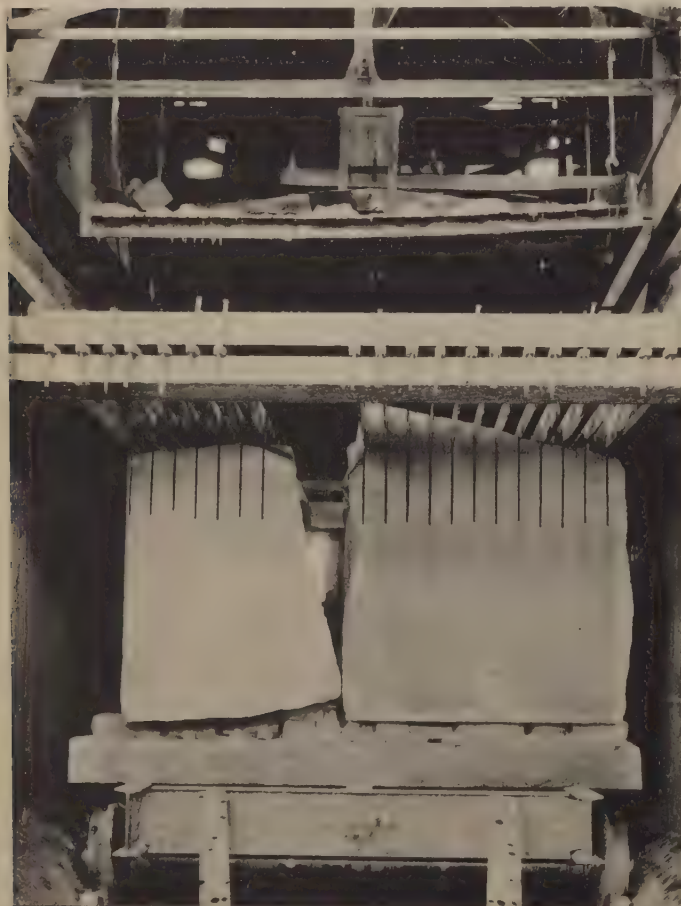
At left is seen the answer to the common question, how do you get the first piece out of a floor? The sides of the block are channelled (the chopping action of a number of steel drills whose points are at different angles) in the usual way, and then by a wedging action from the top, keeping a backward and forward movement, the stone is broken at the base with clean cleavage



Pulling a cut. When a block has been channelled on four vertical sides, holes about six inches deep are drilled along the base of the cut. Wedges, inserted in these holes, are used to split the stone from channel cut to channel cut. Indiana limestone has no bed planes, the formation being perfectly homogeneous

One of the difficult problems in quarrying, naturally, is the getting out of large stones for specific dimension use. Here is a block of stone being cut out for one of the monolithic columns on the Mellon Institute in Pittsburgh

Below, two photographs showing the operation of sawing. In the one on the left, the blocks, as they come from the quarry, are being cut into slabs. In this operation can be secured such fine finishes as those made by shot sawing, chat sawing, sand sawing, etc. The second photograph shows slabs being sawn for jointing by diamond sawing





In the photographs above, two operations of machining are pictured: at the left, cutting a straight run of mouldings; and at the right, cutting mouldings on a curve where the stone is rotated against a stationary cutting tool. This machining process is accomplished by cutting edges of steel used with wet abrasives. The latter are sand, shot, chat (ground flint), depending upon the surface effect desired

Above, turning a monolithic column. In the operation of cutting on a lathe in this way, the cutting edge of steel removes a very small amount of stone at a time without the use of abrasives

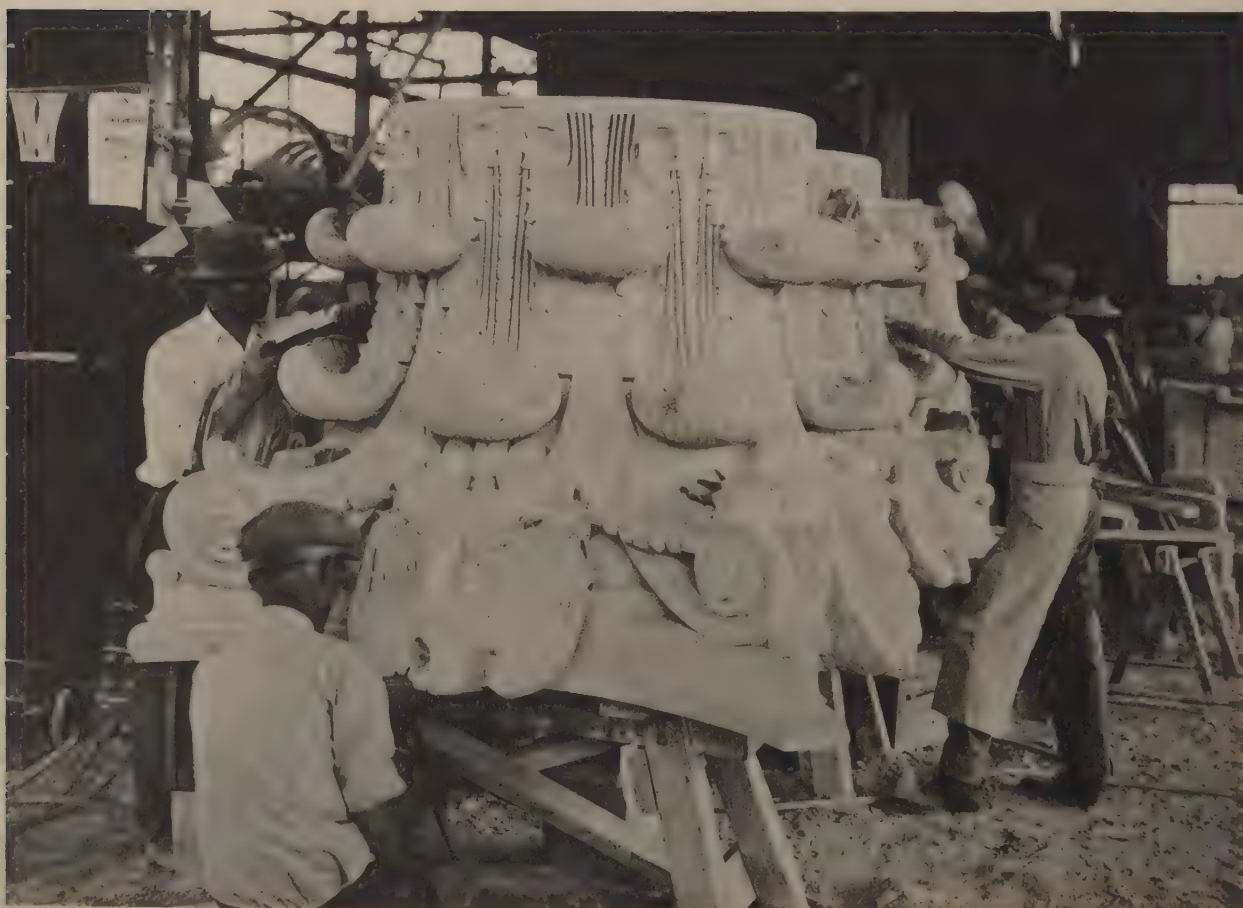
At right is a baluster lathe in which the cutting is done by a process fairly recently developed, using carborundum, which gives the limestone a very smooth finish





A cut stone mill, where the problem is one of arrangement so as to necessitate the fewest possible number of handlings, most of which are made with the overhead travelling crane

The carving of a limestone capital, no longer with the chisel and mallet, but with a pneumatic hammer, with which a skilled workman is able to produce just as much delicacy of feeling



Saturday, June 3.—The efforts looking toward a survey and preservation of our historic national monuments, having made progress in several localities, is likely to become a national movement. Doctor Leicester B. Holland, chief of the Fine Arts Division, Library of Congress, and chairman of the A. I. A. Committee on the Preservation of Historic Buildings, is compiling a national list of buildings, either of architectural importance or of notable historic interest. Only buildings at least a century old are being considered for inclusion in the Atlantic seaboard tabulation—this tabulation being subdivided into lists applying directly to the various states and cities. No structure later than 1850 is to be included in the survey for any part of the country. A ballot has been sent to each member of the Institute with brackets for seven buildings, requesting information as to name and type of building, its architect, date of erection, original owner, present owner, features of architectural and historical interest, and location. The returns are to be grouped first by chapters, where they will be compared for duplication, then sent to Doctor Holland for final compilation in a national list. It is hoped that some such respect and protection may be engendered here as that which exists in France in connection with the French historical monuments. Once a building in France is designated as a historical monument, the owners may not change it without the consent of the government.

Monday, June 5.—Lunched with Jefferson M. Hamilton at The League, where he told me some of his disturbing experiences with the termite, the latter pest turning suddenly from an academic question into a personal threat when it was found to have eaten away some of the timbers of Hamilton's own home in the South. Several years of investigation and experience have convinced him that it is perfectly feasible to prevent the entrance of termites into building construction through several simple structural devices. The problem of eliminating the termites when they have once attacked a building is not so easy, but here again Hamilton's experience and research have shown him effective remedial measures. With the steady movement northward, the termite has become a national menace to buildings containing structural timbers, and the architectural profession should be armed against it.

Tuesday, June 6.—Speaking of an imminent housing shortage, as we were recently, I see that James S. Taylor, chief of the Building and Housing Division of the Bureau of Standards, says that the United States today is short five hundred thousand homes. Naturally, he qualifies this by explaining that we *should* be short that many if employment conditions were to return to normal, permitting families that have doubled up or



The Editor's Diary

are living in make-shift quarters to be housed adequately once more.

Wednesday, June 7.—The New York Chapter held its annual meeting at luncheon today at The League, listening in the oppressive heat to reams of committee reports, which though tiresome to hear, represented a tremendous amount of work accomplished. Incidentally, the treasurer made the unique report in these times of having his disbursements less than his receipts for the year. The Chapter lost but eight members from its roll during the year, five of these by death. The president, Charles H. Higgins, turned over the gavel to the newly elected president, Ralph T. Walker of Voorhees, Gmelin & Walker.

Friday, June 9.—When the details of the Regional Plan for New York and Its Environs were completed three or four years ago, it seemed another of those beautiful dreams which men apparently have the vision to create, but seldom to execute. George McAneny, president of the Regional Plan Association, however, brings out the startling and gratifying news that while the plan provided for an orderly development of this region over a forty-year period, one-tenth of it has now been accomplished. And the best part of this news is that, as the plan ripens into executed form, it will doubtless become more and more an acknowledged fact, consolidating the efforts of officials and citizens alike to continue it. The first four years are possibly the hardest.

Saturday, June 10.—England, after fourteen years' experience with subsidized housing, has put an end to the practice, with certain exceptions. At the end of the World War, with a shortage of four hundred thousand houses in England, the Government tried to bridge the economic gap between the price that the ordinary wage-earner could pay for a home, and the cost at which such houses could be built to sell or to rent. Curiously enough in these fourteen years' experience, several changes in the subsidies, either up or down, have resulted at once in a corresponding rise or fall of costs. Quite recently the gap between what the tenant can pay and what it costs to provide him with shelter, has

narrowed down, from two causes. In the first place, the price of money has fallen; the second, building costs have fallen. The British leaders now believe that, under these circumstances, private initiative and private capital are able to provide the necessary housing without government subsidy. There is still possible and probable the use of various forms of local aid where it may be specifically needed.

Monday, June 12.—Whether due to the long and earnest efforts of Louis LaBeaume's Institute Committee on Public Works, or to the New Deal, a new dispensation of architectural procedure is going into effect at Washington. With the appointment of L. W. Robert, Jr., of Atlanta, as Assistant Secretary of the Treasury in charge of public buildings, word comes that Mr. Robert has called upon the Institute and the Engineering Council to furnish him with lists of competent architects and engineers in every State in the Union. Mr. Robert evidently intends to utilize the professions to the fullest extent in the forthcoming public works program. Full details as to the organization of the Treasury Department and other agencies which have in the past controlled public building, are not yet available, but it is likely that these are to be co-ordinated in some way so that the direction and supervision of all works for the government will be in the hands of one office. It would seem also, to be likely—though this has not been confirmed—that the design of this work will be put in the hands of private practitioners, the government office confining its activities to developing a source of technical information and a supervising force.

Wednesday, June 14.—The June number of *The Octagon* will publish "A Housing Policy for the United States Government." It is a concise and true statement of the policy to be followed in connection with the provisions of the Recovery Act. The whole statement is well worth reading, but the high lights that stand out are: New housing must take care of the needs of the lower-income groups; government-aided housing should be limited to low-price land (thus avoiding the error of which we spoke recently of subsidizing through the government aid the land owner rather than the building tenant); the essential standards of modern housing are the same for all economic classes; any kind of class segregation should be avoided; the quarters of the more well-to-do should be differentiated from those of lower-paid workers solely by having more than the minimum dwelling space and mechanical accessories; the dwelling is to be conceived as a unit in a neighborhood community; no one size or type of dwelling and no single form of community plan should be developed into a stereotypical type.

Saturday, June 17.—John W. Harris, of the building firm of Hegeman-Harris Company, Inc., has just come back from France. He reports that the French were very dubious as to the effect of our building the new American Embassy building in that veritable holy-of-holies, the Place de la Concorde. As the structure has grown, however, and has taken its place so harmoniously in the architectural picture, they have become enthusiastic over the way in which Delano & Aldrich have fitted the new building so sympathetically into its environment.

Monday, June 19.—For the first time since April, 1931, the steel industry is operating at 50 per cent of capacity, according to *The Iron Age*. This is an encouraging sign when one recalls that the industry reached a low of about 14 per cent of capacity. Electric output in the week ending June 17 showed an increase of 9½ per cent over a similar period of a year ago. This is the widest gain since the turn seven weeks ago, and the seventh increase in as many weeks, each larger than in the week before.

Wednesday, June 21.—Lunched with Gerald Geerlings and W. F. Bartels, talking of some of the frightfulness that is found today in the low-cost speculative dwelling. In order to sell, it seems more than ever necessary that a dwelling should have a purple bathroom with "Roman bath"—whatever that may be; a tortured surface of interior or exterior plaster—or both; sunburst effects in the roofing colors; and what is known, I believe, as a "Swiss basement." The sad part of it all is that every one of these horrors has sprung from some attempt on the part of the architectural profession to be clever. The speculative builders do not get these ideas out of their own heads, nor the clients'. Rather they are adaptations of what the builder or the client has seen in houses of a presumably better class. If this sort of thing goes on, the sad humor of Victorian jigsaw brackets, and the 1870 Mansard and cast-iron combination, will pale, for future generations, before our own contributions to the art of civilization.

Thursday, June 22.—Charles Z. Klauder over from Philadelphia joining Eger-ton Swartwout, Alfred Githens, Cass Gilbert, Jr., and myself at lunch. He reports that Philadelphia architects have not yet begun to feel the effects of the increased industrial activity, which is perhaps not surprising, since building usually lags somewhat behind improvement in business generally. The Public Works program gives every promise of decreasing this lag in the present instance.

Friday, June 23.—Arthur L. Guptill, one of the few men in this country with a real gift for teaching art, confided to me today that he has joined the ranks of artists and architects who are enthusi-

astic over the possibilities of the camera—a growing brotherhood, distinguished by such names as those of Frederick L. Ackerman and John Russell Pope.

Sunday, June 25.—On board one of the new fast Boeing planes en route from the Newark airport to Chicago. Somewhere over Pennsylvania, I suppose. After a little bumpiness at the take-off, in the effort to get a deeper cushion of air under us, the going has been very smooth. We climbed to about three thousand feet and have been up and down perhaps one thousand feet, depending upon how the pilot finds the wind. Just now we're picking our way through a bunch of cumulus clouds, around one, over the next, partly through another. Just a small bunch of them, for now we're in the clear, crossing over a mountain range. Luncheon is served by an efficient stewardess, the various dainty items all sealed in oiled paper bags, the hot coffee or iced lemonade out of a thermos bottle.

The lady seated in front of me is trying to catch a little nap, her chair being adjusted by means of a lever so as to recline.

The mistiness of a warm, humid New York day is far below us; ahead a great bank of cumulus clouds lighted by brilliant sunshine. Looks as if a storm might be rolling up towards us from the west. Running into the advance guard of it now, with a little bumpiness, as if an elevator had slipped down a few notches and was caught by the safety device.

Now there are clouds below, beside us and even above, the latter showing blue holes where so recently there was unbroken blue sky. It is whispered into our cotton-stuffed ears that we are about to land at Cleveland. One hears the rattle of gears as our retractable landing wheels are unfolded from their nests in the wings. The earth comes rapidly up to meet us—there is no sensation of descending—and we taxi up to our gate at the airport. The air is hot and dry after those cool heights. Fifteen minutes to stretch one's legs and watch the plane being refuelled, then we are off again.



Flying above a sea of clouds

Must be out over Lake Erie, and the going rather more bumpy than anything we've had. The lady in front is not enjoying this—a touch of seasickness, and no deck rail! We're flying low now, trying to keep under the thickening mass of clouds. It is thick below us, too. As we bore through a cloud bank full of rain, I look for raindrops on the wing and window, but there are none—merely a film of water travelling horizontally over all outside surfaces. It is almost as if we were down in a submarine.

Clearer below now, with the cultivated fields making a very neat but irregular checkerboard, with greens of many shades, and the lighter ruled lines of the highways. Climbing higher now, trying to get above those clouds ahead. Suddenly an illuminated panel in the front of the cabin flashes, "Please fasten seat belts." Ordinarily these are fastened only when taking off, and again when landing, when the bumpiness is greatest. Instantly the stewardess comes up the narrow aisle with the word that we are apparently coming into some rough weather. We were! As she spoke, and as I reached for my belt, the plane dropped out from under us. I popped at least eighteen inches out of my seat, and it seemed to me that the little stewardess was going right through the top of the cabin. It grew darker ahead; a bolt of lightning struck earthward off to the right. More bumpiness, but nothing so unexpectedly severe as that first jolt. Darker ahead; dark above, and that ugly storm-yellow below. Water sweeping over the window glass—not slanting but absolutely horizontal against our speed of two hundred miles an hour. More lightning. I suppose there is little danger from that up here, since we haven't enough capacity to attract a big charge.

We're through the worst of it. Clouds all around us, but the earth is once more visible. Looking back, the dirty yellow color extends right to the ground, with a vertical edge visible off to the right—hard rain, I judge. Clearer ahead, with lakes below—little lakes and big lakes—and still we bore through, the two motors drumming like the roar of a train over a trestle.

Climbing again. Here's another dark mass ahead. One really cannot write as fast as the conditions change. Trying to duck under the next cloud—yes, we did it, bumping somewhat. There's a flash of sun. Gone. Now thicker ahead and we're climbing steeply to hurdle this next one. Higher and higher. Blue sky—a long horizontal slit of it ahead. The belt warning disappears. A bluish haze below. Coffee and cookies offered but not taken. Lake Michigan off to the north, and there is no horizon line marking it from the clouds. More houses below, smaller fields, more roads—converging on Chicago. And here we are, with a steeply banked turn, all set to see the Fair. Four and three-quarters hours total elapsed time from Newark!

Housing—Why, When, and How?

By Henry Wright

Part One, dealing with Mr. Wright's extensive researches into housing for America, appeared in the July issue. In it he laid the

ground work for an attitude towards housing that might well govern the extensive operations which will probably accompany the National Recovery Act movement. In the present sec-

Part Two

tion, Part Two, he builds on this ground work, recapitulating the experiences and lessons learned from Sunnyside, Radburn, and Chatham Village particularly, and presents the principles established which light the path for our professional activities in the immediate future.—EDITOR.

V. THE CASE FOR GROUP HOUSING

WE are now ready to single out two generic divisions of housing for more detailed study. These are the Group Dwelling and the Garden Apartment. Under these two concepts can be summed up the best past experience in improved housing. As classifications they are flexible enough both to include the best past types and to encourage good new forms. They offer an ample field for the best principles of planning, for good operating methods, community organization, and large-scale practice.

AVOIDING OLD LABELS

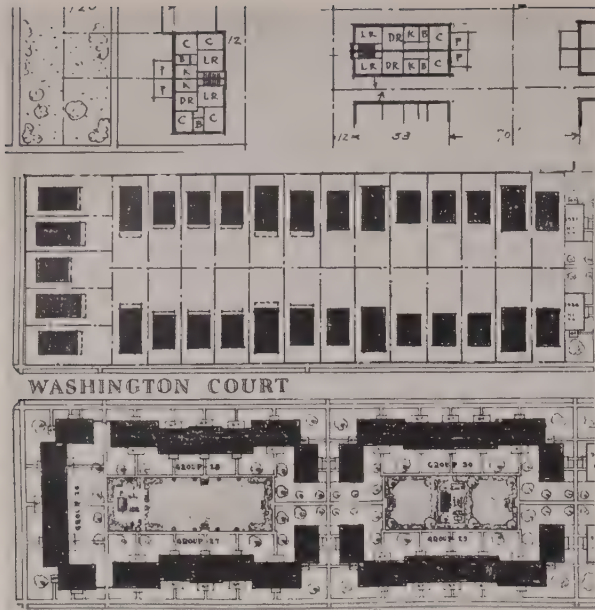
In pursuing housing history, we have been obliged to take account of various crystallized types. We have spoken of "single-family detached" houses, and "single-family row" ones. We have encountered "flats" both single and double, in buildings two or three stories high. Then we have spoken of "multi-family dwellings" and of apartment houses. All these terms have a limited usefulness as labels. As guides they are likely to be pernicious. Though our thought has too often frozen into these categories and has consequently been fitted to no mold but theirs, it must be warmed through once more by imagination and rendered more fluid. The builder of the Dark Ages plundered ruins for finished columns, lintels, and arch stones; but the monument he thus assembled was at best a most ingenious misfit. It is not in this fashion that we have evolved the technology of the modern suspension bridge; we must no longer do so for our housing.

While local habits and traditions are not to be ignored, it is particularly necessary to avoid dependence on any one house type or any one local variant. The needs of our family today are too varied to be served by just one kind of house, changeable only in the number and size

of its rooms. Defects of our past housing practice have unfortunately been *embalmed* in our building and zoning laws.

Our criteria are of a more general and deep-lying sort. They must be found in observing certain human needs common to everybody, whether the family be large or small and whether the people be young or old. For instance, every household requires good light and ventilation. The best means of securing this will be by some kind of *shallow plan*. Good light and good view, as well as the need for open recreation space, require massed spaces of open land. Since urban land is necessarily expensive, the purchase of additional quantities of it is to be avoided. The natural expedient then is to "borrow" vacant land that is useless in its present location. This can be done by rearrangement of the plan, eliminating dark side yards and alleys. This arrangement in turn leads naturally to building the houses themselves in closed groups or rows.

The accompanying diagram shows what is perhaps the most significant change in principle which must be introduced into our city planning, even where this planning is qualified by the best existing zoning regulations. Our whole process is predicated on the fact that land is already owned in the form of lots. Zoning has assumed that all we can legally do with these lots is to make the best of a bad bargain. This *Best* is not enough better than the average *Bad* to constitute much of an advance. The source of the deficiencies lies in the organization of the space into narrow strips (or lots) lying side by side. Naturally the side yards become narrow and rooms on adjoining sides destroy sunlight and privacy for one another on a mutual basis. Yet how much is to be gained by making these side yards a fraction wider by zoning? At best very little. Too often the result is to encourage the further elongation of the oblong space within



The lower portion of this plan shows two-thirds of a Sunnyside block with attached row houses and two-family dwellings utilizing two-room-deep space. The upper plot shows the same amount of living space secured in ordinary detached houses and flats spaced according to liberal zoning laws. At the top are typical plans of two-family dwellings for both treatments. The interior garden court, which is the heart of the Sunnyside plan, is equal to the area of the excess front yards and side yards between buildings in the normal layout

the buildings, that was none too well arranged from the beginning, in order that the total building space might not be reduced. What we have been doing is merely to blow up a bad arrangement to larger and more costly proportions. We have not altered fundamental defects in the plan. The upper block plan as shown is made up of the usual dwellings of single or two-family type, with the width of the side yard that is required by the most advanced zoning laws. These dwellings are drawn with a floor space as nearly equal as possible to the space in the groups of attached single and two-family dwellings in a block at Sunnyside, Long Island, shown below. There are also shown the typical two-family plans obtaining in each case. The common garden courts in the central block of Sunnyside, so effectively used in this community, occupy a space just about equal in area to the aggregate of the useless side yards in the "normal" plan. Windows instead of looking into the adjoining houses look out upon the broad planted central area. *Group planning assembles buildings and land for effective openness without extravagance.*

The expedient of the row meets also the need for cheap though sound construction, permitting continuous foundations, continuous erec-

tion processes, and doubling along party walls. *Heat loss* must be reduced and maintenance simplified, if we are to reduce real rents, whatever other special requirements the family may have; and these needs too are met best by the compactness characteristic of the row.

It is impossible, so far as can be seen, to achieve a combination of these advantages except through group housing, planned on a large scale. And only after these fundamental requirements have been met do we come to variants for individual needs. But when we examine group housing we find that it permits sufficient flexibility to care for every specific departure necessary within its general framework. Thus any community must provide dwelling spaces of various sizes. These should be disposed mainly on either one, two, or three floors, organized in relation to vertical and horizontal divisions. The choice of the kinds of dwelling space provided should be dictated primarily by the considerations of privacy, safety, and good exposure. None of the familiar dwelling types of the past has met all these requirements satisfactorily. Group housing on the contrary is capable of meeting them under intelligent evolutionary development, and asks only to be freed from artificial restrictions whether of law or of mental outlook. Not all the problems have been entirely solved, but we can already count on adequate sound-proofing and group servicing to free group organization of its principal past defects.

THE GERM OF GROUP HOUSING

Put in a different way, group housing is a hybrid. On one side it derives from the row house; its other ancestor is the flat. In certain War housing projects, and at Sunnyside Gardens, two-family and even three-family dwellings or flats were freely combined with single-family dwellings in fully attached groups or short rows. This was possible by virtue of identical plan depths and similar methods of construction in both of these forms. The greatest flexibility and variety was achieved with respect to the types of dwellings provided; the diversity which was functionally required became the basis of considerable architectural variety and charm; and the flat itself was fundamentally improved by this new conjunction with the row house.

The older forms of row housing, such as those in Philadelphia, with fronts uniformly only 16 feet wide though the depth might reach 54 feet, well deserved the opprobrium they received; but against the row house in its new form



A street scene in Seaside Village, a War project since owned and operated by the Bridgeport Housing Company

Below, group houses typical of Sunnyside Gardens, Long Island, built in 1926



such prejudice is ungrounded. As for the flat, the scorn levelled against it overlooked the fact that by the simplest and easiest devices the flat itself might have been surprisingly improved. *The whole problem of decent planning is to get broad frontage*; and so the first step in group housing is to abandon the lot line. The tandem room arrangement characteristic of the flat is squared up into a compact and convenient form, more efficient alike for building and for house-keeping. Above all, the narrow side yards are eliminated; all windows open out upon decently wide green spaces, and the rooms can be oriented to receive full and regular sunlight.

The group dwelling need not, however, be stigmatized even in the eyes of the antagonistic by too close a relationship to the flat, since it absorbs many of its essential characteristics from the apartment house.

GROUP HOUSING DEFINED

Within the concept of housing here envisioned we shall retain, for purposes of clarity, only two classifications (other than the detached single-family house), the "group dwelling" and

« ARCHITECTURE »



A section in Mariemont, a completely planned community built near Cincinnati, Ohio, started soon after the War

Below, view of group houses at Chatham Village, built by the Buhl Foundation at Pittsburgh, Pa.



the "garden apartment." The distinction between the two relates to the presence or absence of common services. How deeply this cuts will soon become evident. For the moment, let us assert that the apartment house is a structure that includes (to whatever extent) *halls or stairs used in common*, which must be maintained through some kind or other of joint arrangement for service. The group dwelling gives *each family direct access* through its own entrance or private hall, maintained entirely by the occupant.

As against any of the older familiar dwelling types, "group dwellings" are distinguished as follows: More than two dwellings are erected in one continuous structure; that is, they are not semi- but fully attached. Their height runs from one to three stories. They have a broad-front, shallow plan, not over two rooms deep. They provide independent access to every suite at ground level. There is no necessity for internal stairs or hall space used in common by more than one family.

The groups may consist of a wide variety of dwelling types. There may be groups of:

a. Single-family row dwellings, one or two stories high.



The great speculative urge of 1924-25, stimulated by the general tax exemption of 1923 on new dwelling construction in New York, carried over for two years after the tax exemption terminated in April, 1924. At left, single-family detached houses on 25-foot lots, crowded together in soldier-like rows on wide streets. Here the density of twelve families per acre should offer ample space for generous organized openness. While New York acquired 100,000 flimsy dwellings such as this, London, under the policy of careful government supervision and a direct subsidy entailing no greater loss to the treasury, was acquiring almost as great a number of substantially built dwellings in orderly, attractive communities as pictured above to the right

b. Two-family ("flat") dwellings one over the other, each occupying its own floor.

c. Combinations of *a* and *b*, as in the Sunnyside group previously shown.

d. Finally, there may be three-story dwellings such as I first suggested in my March, 1932, *Architectural Record* studies, in which, in one way or another, the various floors are subdivided for use without requiring joint use of internal stairs.

No longer can we differentiate between apartment houses and other group dwellings mainly on the basis of height. An apartment may be at times only two stories high, with either the front entrances or the rear ones in common. A group house, on the other hand, may be organized to occupy as many as three floors. The group house may be more complete in its service arrangements, such as heating and waste incineration, than many cheaper apartments. The border line between the two types may not be an absolute one in fact, and both kinds could be supplied side by side in a single large housing structure; but for clarity of presentation the terms will be used as outlined.*

The difference between hall service and non-service which has been made the basis of our definition has more consequences than are often suspected. There is more involved in hall service than just the actual janitoring and lighting of halls and stairs, the care of gardens, and the greater first cost of fireproof stair walls and more

costly maintenance of such publicly used spaces. There are managerial costs behind these, and these managerial costs exist even when there is nothing more to be done than caring for a few halls. With the final elimination of practically all janitor services, these costs can disappear. The owners of the rental structure may shortly be able to provide every tenant with an individual automatic heating device, or to contract for heating with a steam or other supply company, so as to leave no regular internal maintenance responsibilities whatever. This will relieve housing investment of many of its present unsatisfactory attributes.

It should be noted that the break in cost between non-hall and hall types does not necessarily occur at the same point as heretofore. The break between the economy gained from the two-story building, which is erected from the ground, and the three-story or higher building, which requires towers or hoists, will not hold good unless, as seems quite possible, the employment of certain new construction technics, involving light-weight pre-fabricated walls, aided by new forms of tractor hoisting equipment, should place the three-story building, especially where basement can be omitted, on a new footing of being erected from the ground. If this comes about the three-story building will become the least expensive form of construction, and the point of transition from low to higher cost construction will occur between three- and four-story dwelling heights. Add to this the possibility of placing some of the rooms of all the upper suites on the second floor, thus eliminating fire-proof stairs, penthouses, and parapet

* The one point at which confusion might arise would be in respect to certain distinctively open-stair groupings, in which the common-entry stair would become so definitely an extension of the public sidewalk that the scheme might fall within either of the categories.



Photographs by courtesy of Philadelphia Housing Association



Travellers are familiar with the dreary and fantastic rows of houses in Philadelphia. The queer wooden boxes projecting from the second story of brick houses are due to a peculiarity of building code regulations, as are also the universal narrow width of 16-foot lots. The Philadelphia builder does give a lot for the money; the houses at the left above sell for \$5,390, those at the right above for \$3,990—the latter have a depth of 30 feet

walls around the roof, and three-story non-apartment or "group" dwellings would seem to promise the lowest cost possibilities on city land values.

It will perhaps not be necessary even to suggest what a range of space can be used by a well-equipped community. It can include, for example, simple, convenient, but incomplete shelter which can omit an actual working kitchen, since the occupants depend for food, entertainment, and guest accommodation on their proximity to a "mother" community building or apartment hotel. This arrangement is especially useful to those of semi-nomadic habits. On the other hand it may still retain all the functions of the complete individual house. The two types of development we shall study in detail offer ample opportunity to exhibit the basic principles of design and construction. They also enable us to study the introduction and development of joint amenities in recreation, nursery schools, and adult workshops, and an endless variety of other facilities, enriching the life of the community and providing fruitful employment for a growing leisure.

AMERICAN OR ANTI-AMERICAN?

It is unfortunate that to a large number of people in this country the term "housing" represents something anti-American. Without question, the process it describes undertakes to meet conditions that are new and foreign to an America of the late nineteenth century—a period of homebuilding still vivid in the minds of those yet responsible for much of the mass thinking of today. These methods might have remained tolerably acceptable, had the supporting conditions not happened to shift away from under

them. How little progress we have made in this country toward adjusting our methods to modern needs is demonstrated in the sad story already told of the development of the St. Louis flat and its offspring. Because of such backwardness, those who have undertaken to propose new and efficient methods of planning have been forced to fall back upon the more advanced experience abroad. They have been obliged to refer to community planning that embodied particulars unhallowed in American tradition. These experiments of our own have, however, despite their European affinities, continued for a sufficient time and have proved sufficiently practical and conclusive to establish their validity as a basis for well-founded American procedure.

It is easy to leave out of mind that the essential accomplishment of these experiments is a return to a still earlier, truly American tradition, one that antedates even the crudeness of our nineteenth-century "progress": the tradition of the Colonial village. Despite the difference in the conditions then obtaining, the essential elements of modern community planning were already there: the "common"—land held by the community, around which the village was grouped; rational open spaces; exposure and protection for every house; an orderly arrangement with due regard for human amenities.

Nor is the validity of our newer experiments impaired by the fact that they are at variance with accepted and customary real estate practices that cater to our insistent retention of a scarcely practicable home ownership ideal. (When we think of these owned homes, there comes to mind an attribute not irrelevant in a discussion of foreign influence. Says the builder,



The two illustrations shown herewith indicate progress in the method of grouping employed in large-scale housing during the War. At the left, the elevations of the Newport News project, showing a number of distinct types which become noticeable as "repeats." At the right, are groups from Yorkshire Village made up of special units combined in a variety of sizes to produce group effects that avoid the more obvious repetition

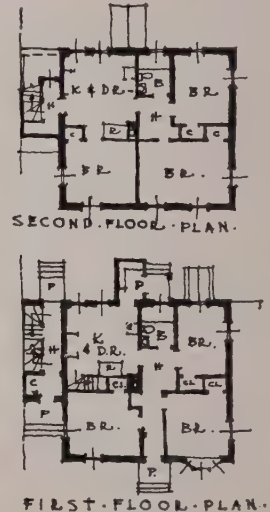


"Will you have it English, French, or Spanish?" If the English or Spanish are quite thoroughly ancient, or in other words out of date, the product is considered appropriately American.)

It is in these significant departures of ours, through European or other available modern experience back to our own best tradition, that we

may discover the roots of the new community. The necessity for organizing the community as a whole, to utilize efficient forms in moderate-cost dwellings, is becoming every day more insistent.

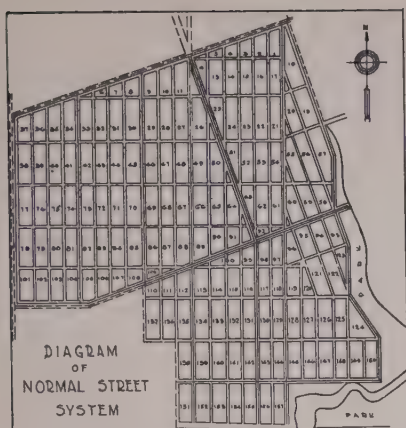
During the operations of the two Housing Boards that existed under government mandate during the War, intensive study was made at



Above, a photograph and plans of a group of dwellings in Seaside Village in Bridgeport, designed by R. C. Sturgis and A. H. Hepburn, architects; the centre dwelling, flanked by single-family houses, is a two-family flat, the entrance to the upper floor being in the recessed one-story wing

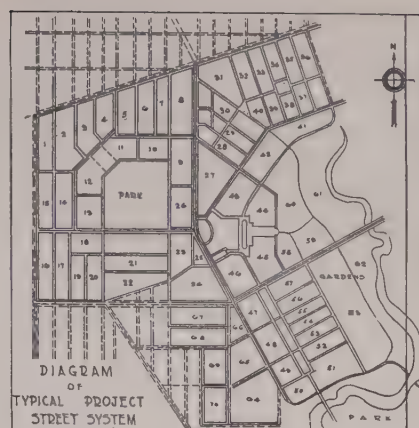
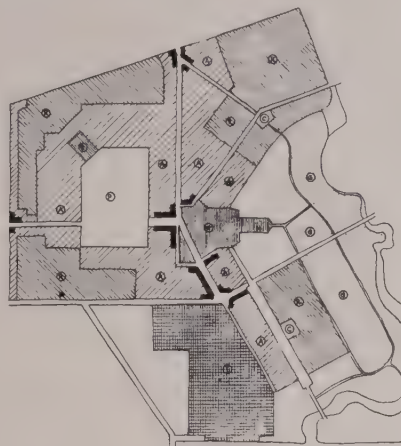


At left, a four-family dwelling at Buckman Village, its plan a prototype for later apartments at Newburgh, Ithaca, St. Louis, and elsewhere. Above at right, a four-family group row dwelling at Mariemont



Below are given the comparative figures for the lengths of street frontage in the schemes at left and right:

11600	Boundary streets, half charged to adjoining property.	7200
2		2
9,200	100-foot Streets	8,100
22,300	80-foot Streets	19,600
86,200	60-foot Streets	48,300
	40- and 30-foot Streets	5,000
123,500	Totals	84,600



Here are studies of a hypothetical garden suburb of New York. The normal plan at upper left provides a total area in streets of 190 acres (32.8 per cent of the whole 580 acres, not including an 80-acre park); and total salable frontage of 172,000 feet. The scheme at the upper right-hand corner provides a total area in streets of 135 acres

(23 $\frac{1}{3}$ per cent of the whole), with a total of 114,300 feet; equivalent usable frontage of 147,000 feet. Centre diagram shows use areas: A, apartments; R, row houses; C, communal space; P, parks; G, subsistence gardens; L, light industry with central power. Store buildings are provided at several centres and are shown in black

home and abroad which led to the housing forms then applied in some twenty or more important projects completed under these agencies. Since a majority of these projects were laid in the Philadelphia-Baltimore region, it was natural that their basic dwelling form was derived from the row house commonly used in that district. However, they bear only a distant resemblance to the narrow, awkwardly planned, monotonous rows so familiar to visitors to those cities, rows that continue in current building operations to this day.

The individual house plan was widened out and squared up into a compact, cheerful, and livable form. Community interest was obtained through attractive variation of group design, and by breaking long rows into short groups of six to eight family units each, pleasingly arranged in block patterns and carefully adjusted to natural grades.

Certain of the projects, particularly Buckman Village, Chester, Pa., and Newburgh, N. Y., included detached and semi-detached houses on the one hand and small two-story apartments on the other. In Bridgeport the designers went further and successfully grouped vertical two-story houses and flats in contiguous structures. At Seaside Village one-and-one-half and two-story dwellings were grouped together. The latter were arranged, inside, partly as single-family homes and partly as flats, so that even an experienced student can scarcely distinguish the

difference from the outside. In 1922-1923 the town of Mariemont, Ohio, was started with a large number of architects collaborating. The dwellings in the various areas ranged from small apartments and group row houses to organized groups of detached single-family dwellings, the latter reaching into the higher-cost field. Among the other communities in which similar efforts were being carried forward might be mentioned Forest Hills, Long Island; Forest Hills, Boston; St. Martin's, Philadelphia; and Wilmington, Del.

Except for the War projects, however, these were all limited to the major purpose of demonstrating improved methods of land development for fairly high-class community building. This limitation was sometimes actually a hampering one, and the projects have only incidental interest in the evolution of planning for moderate-cost housing. For this latter purpose we must turn to a group of interrelated projects at Sunnyside, Radburn, and Chatham Village, for which the foundation was laid in the organization of the City Housing Corporation of New York in January, 1924.

PRELIMINARY STUDY FOR AN AMERICAN GARDEN CITY

During the summer of 1923, in New York City, the author, in association with Mr. Alexander M. Bing and Mr. Clarence S. Stein, was commissioned by one of the foundations to make

a theoretical study of a possible American application of Garden City principles, as they had been developed in England and other European countries, so as to apply them to local situations and practices. This study included:

1. Analysis of apartment-house plot coverage. This demonstrated the advantage of blocks larger than those typical in New York, and providing very greatly improved planning organization and sunlight exposure.

2. Plan of community development for an existing vacant square mile of land at that time in one holding in the Brooklyn sector, having adequate transportation facilities to New York. Taking this plot of land in South Brooklyn running down to the shore line, studies were made for a complete community of 25,000 population on 640 acres, or the equivalent of a square mile. The density was to be approximately the same as that in the average mixed residential sections of Brooklyn. There were to be single-family row houses, two-family flats, and apartments. The large number of suites that usually are placed above miles of unnecessary store fronts were to be replaced by apartments in buildings held separate from certain definite, orderly shopping centers devoted exclusively to commercial use.

The street system was reorganized to permit the orderly placement of these various uses. A land and improvement cost was reached, totaling \$4,250,000 for the whole tract. This included the reduction in the length of streets and utilities from a total of 124,000 feet, as shown

in the city map, to only 86,000 feet as required in the proposed scheme.

In the meantime, however, the property was acquired by a speculative syndicate. They held a gigantic auction sale and marketed about one-half of the land, leaving the city street pattern as it was. The prices they obtained, if averaged up for the whole tract, would have brought the total to \$6,400,000; and this was with no improvements whatever, apart from a few cinder streets put in to facilitate sale. To complete the improvements would have cost \$3,690,000, bringing the total to \$10,090,000. But such improvements were not made—only cesspools and makeshift street improvements were later provided—and to complete improvement at the time of this writing would cost at least 50 per cent more because it would be a patch and piecemeal job. Thus we have raw land sold as lots for 150 per cent of the price of fully improved land under a good plan, or a difference between \$4,250,000 as against three times as much, or \$12,750,000, were the land to be fully improved now. The property as developed has already begun to blight, weighing on the owners and on the city alike.

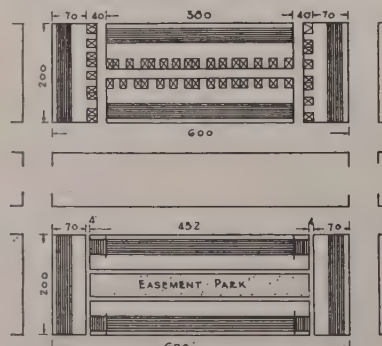
SUNNYSIDE GARDEN BEGINNINGS

No actual project resulted from the foregoing study, although valuable experience was obtained. Those interested continued in the desire to do something in America commensurate with the Garden Cities in England, and in February,

Below, a photograph through the middle portion of a block developed in the customary manner, utilizing rear yards and garages on an alley. Contrasted with this in the lower right corner is the centre garden court of a Sunnyside block, in which the distance from rear to rear of houses is the same as in the alley



scheme. The centre garden merely replaces space normally occupied by alley and garages. These latter are assembled elsewhere in groups, as shown at left through an entrance gateway. The plans show how the removal of alleys adds building frontage to compensate for the space required elsewhere for garages



1924, was organized the City Housing Corporation, with Mr. Alexander M. Bing as president. This was followed by the purchase of about 1100 (20-foot) building lots, occupying about 70 acres gross, in Long Island City, which is closely connected by subway to New York City. This property was planned and developed during the next four years as Sunnyside Gardens.

Planning for Sunnyside was limited by the existing street layout, which followed the customary gridiron, with characteristic New York City blocks of approximately 200 × 600 to 200 × 900 feet. Not only did the buildings have to be planned to fit the blocks, rather than vice versa, but it was found that no major street changes could be made. This left at least one through street which would still have to serve as a major traffic artery, tending to cut the community into two parts and increasing the likelihood of accidents. In two minor instances, however, street-endings were vacated by the city and small blocks consolidated for the creation of more favorable building sites.

The building forms adopted followed rather closely the actual plans of certain types common in the Brooklyn and Queens area, including both the typical single-family row house and the two-story flat type dwelling with four rooms and bath for one family on each floor. This last type continued with minor variations as one of the principal plan types throughout Sunnyside, both in two-family dwellings and in three- and four-story apartments. Later, at Radburn, it served with additional alterations as a two-family dwelling.

Though the plans in themselves were by no means radically different from those of speculative builders, they were used in a manner fundamentally different in every particular of group, block, and community organization. The contrast is eloquently shown in the block plans previously shown on page 86 and accompanying photographs, where a typical Sunnyside block is compared with a speculator's block built at the same time in the same borough. The dwelling types in both instances were almost identical in size and shape. In Sunnyside the usual wasteful, narrow side courts have been eliminated and the space thus gained has been concentrated in the centre of the block, from which garages have been removed. This has given the ample central garden court which is the chief characteristic of Sunnyside. This court actually paid for itself, as shown in the technical study of the costs of these central gardens and the removal of garages to near-by compounds, which may be found in a

pamphlet written by myself and printed in 1929 by the City Planning Institute.

The removal from the block interior of all alleys and garages left a strip of open land sixty feet wide between the ordinary backyard spaces of the dwellings facing opposite streets. Instead of adding this area to the individual rear yards, it was retained as a common park space, although to satisfy mortgage requirements the private lots were deeded back to the centre of the park and the park space set aside for common use on the basis of a 40-year easement.

These central garden spaces, found throughout Sunnyside with a combined length of nearly three-quarters of a mile, are the most distinctive contribution of this project to the technic of planning or housing in fairly congested urban areas. As a matter of fact, however, the architects' early studies of block planning were concerned less with provision of an internal common park space in each block than with an effort to eliminate narrow side yards and to group the garages, with the purpose of reducing the costs, unsightliness, and waste of internal alleys with garages. It was finally decided to remove the garages from the living blocks altogether, to a neighboring compound, utilizing sites of special shape unsuitable for dwellings. This made the internal block park possible and virtually inevitable.

These earlier studies, including architectural detail plans, during the first two years at Sunnyside, were developed by Clarence S. Stein and Henry Wright, architects associated, who were responsible for the general site development leading to the block arrangement with internal park areas and garage segregation. A part of the third year's development was designed by Frederick L. Ackerman, in accordance with the corporation's policy, likewise followed at Radburn, of fostering variety in architectural solutions through the participation of several architects.

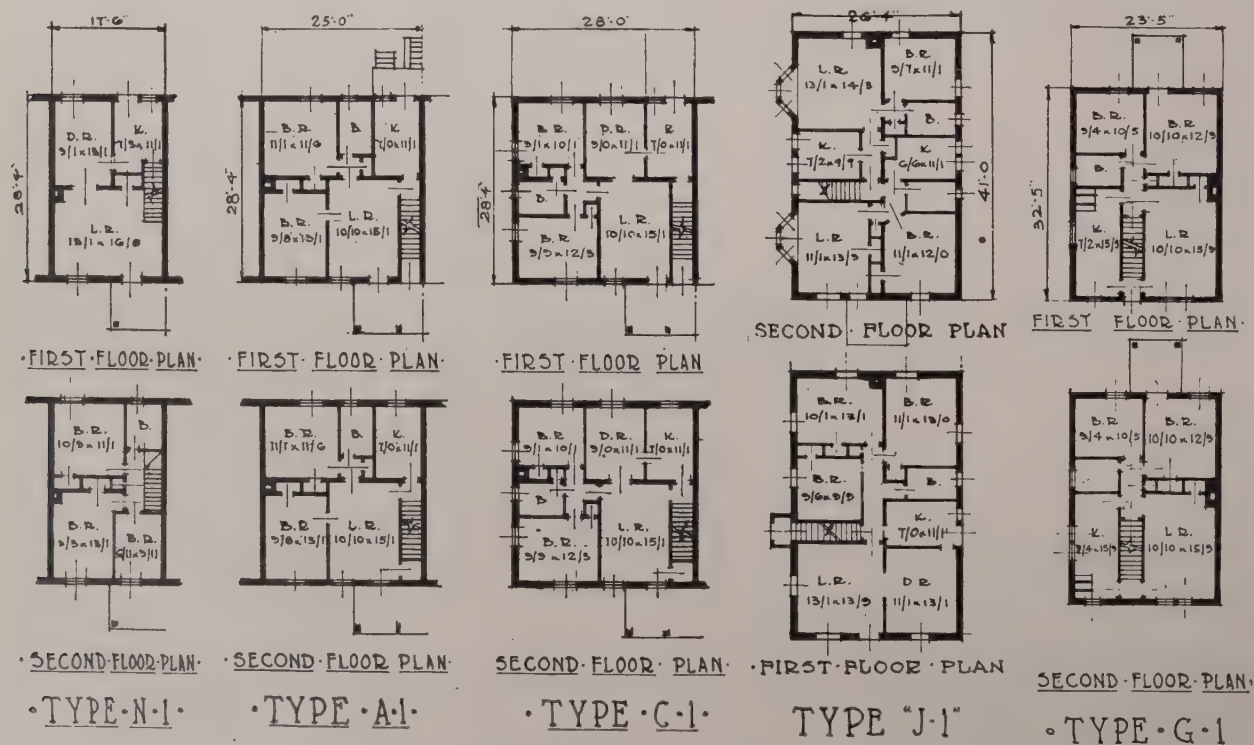
The important accomplishments at Sunnyside rested on the virtual elimination of the original lot lines. The architects were enabled to design both dwellings and apartments in complete blocks, irrespective of any lot-line divisions. In some parts the property did not take in full block ownership, and here there were opportunities to test out single-frontage units. Yet the outstanding advances were achieved through the elimination of the lot-unit limitation. Even in such planning as at Jackson Heights or in the Metropolitan Apartments, at about the same time, this lot unit had been retained, and though the size of the lot was larger than usual, it still

In the first unit at Sunnyside the architects grouped within one and a half blocks three distinct kinds of accommodation: single-family, two-family, and three-story apartment dwellings. These were segregated into groups related to one another for architectural effect. Not until the second year was the practice begun of organizing both single-family and two-family units containing dwellings, in a single group, with as many as five different sizes or types of plan in one group. This intermingling thereafter became the planning basis for the entire project, and represents a specially significant advance toward "group housing." The third unit comprised two full city blocks 900 feet long each. Lengthwise these blocks were occupied by three row-groupings of one- and two-family dwellings, each such row terminated by a three-family two-story dwelling set back to cut into the block. This divided these unusually long blocks into three interior courtyards, providing cross-walks at two points, increasing the apparent width of the court, and adding to the architectural interest. The three-family dwelling referred to was in fact a pure invention of the technician to accomplish three objectives: first, to provide both larger and smaller flats than in the other units, that is, a six-room on the first floor

No difficulty was found in the association within a single block of people living in single-family houses, in two-family or three-family houses, and in apartments. Neither was there any objection to their owning or renting from: (a) individual owners of two-family or three-family buildings, or (b) the company, operating rental apartments, except that the company's competition eventually proved difficult for small owners who had purchased two-family and three-family dwellings, and who failed to get rich quickly in competition with the larger-scale management of the company. It may be questioned whether this difficulty was inherent, or whether it resulted from lack of knowledge at the outset that the company would build apartments for rent which would thus compete. The original purchase price, methods of payment, etc., for the houses sold were set up in ignorance of this last factor.

The development of Sunnyside was distinctly a pioneer and experimental process. In spite of careful study and investigation, mistakes were made, particularly in the case of the recreation facilities in the first unit, as later explained under "Recreation."

The release of lot limitations had a definite



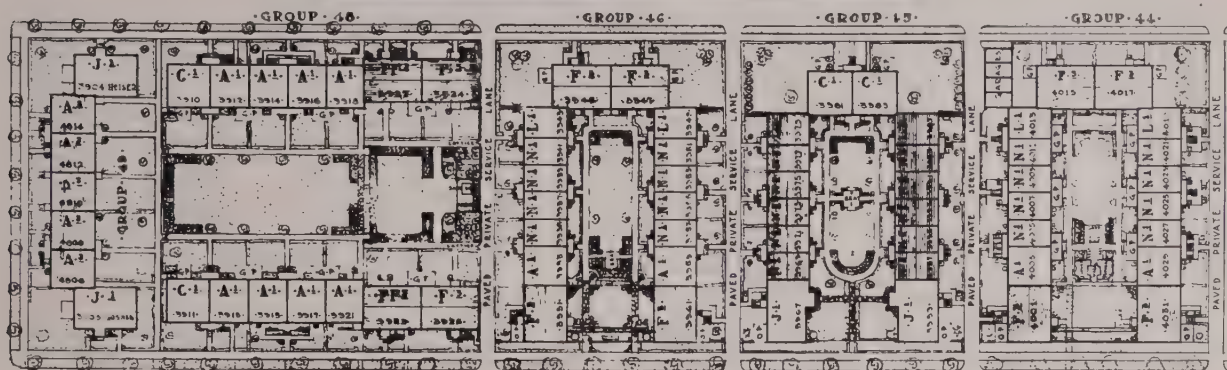
Sunnyside employed for the most part the three types shown at the left. Type F-I is the three-family unit, while type G-I provides a two-family scheme for an occasional variation

At right, one of the Sunnyside units, consisting of a three-family house, a nine-room two-family house, six flat-roof, six-room, single-family houses, one eight-room two-family unit and one ten-room two-family unit. Below, the plan shows a Sunnyside block with part use of an



interior park, and part showing the cul-de-sac court.

The illustrations below show, on the left, a Sunnyside interior block park and, on the right, the cul-de-sac court used at the border of the property. Clarence S. Stein, architect



beneficial effect on the planning of the larger apartment units in the later years of the Sunnyside operation. It led to the development of the "perimeter" plan for large apartment units occupying a nominal city block. This simplified method of planning will be more fully covered in the last section of the book, but we may here pause to note the planned relationship between the larger apartment court and the two-and-a-half-story residential units in the same block. The best example of this is Hamilton Court, which provides a broad opening toward the interior block court, and steps down from four stories to three stories at the end adjoining the lower dwellings. This group also provides necessary store facilities for the community.

More recently a new problem has been raised for Sunnyside by subsequent developments

around it, which have been almost altogether of a four- or six-story apartment type. These neighbors have not only brought a lot of cross-traffic into the Sunnyside community, but have advanced property values and hence raised tax assessments. The assessments have to be paid but it would be impossible for the owner to realize on the higher property value without breaking down the homogeneity of the present community. This situation was not altogether unforeseen, as the planners felt from the outset that the land at Sunnyside, though purchased at low cost, was intrinsically too valuable and too directly in the line of intensive city growth to be suitable for use by single-family houses, and was only barely possible for two-story multi-family buildings. The subsequent experience at Sunnyside raises the general question whether it is

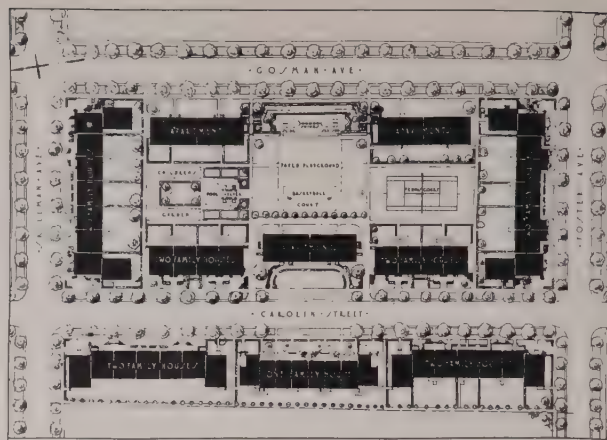
safe to build and sell smaller types of dwellings planned for less intensive use than is contemplated by a general local practice which inevitably results in exaggerated land values. Had the company itself retained ownership, the situation would be altered, since the difficulties of the individual owner arise not from decreased values but from taxes on *increased* values, on which he cannot realize because of disassembled holdings and long-term deed restrictions.

Although the architectural effect at Sunnyside is on the whole harmonious and apparently homogeneous, it represents a continuous evolution of fundamental planning and planning theory. The method of grouping that has been described underwent constant change in the earlier years and a still further development in the latest units at the border of the property. Here there was uncertainty as to possible adjoining uses. Cul-de-sacs opening off interior streets permitted these rim houses to turn their backs to the outside. This arrangement was highly experimental in respect to sale. After a test, however, five such courts were introduced, each of which had all its houses fronting on a courtyard providing for pedestrian entrance only. Between the rears there was a service drive. This variation from the normal was accepted by purchasers of individual holdings, even though some difficulties had to be overcome in deeding.

Another factor in the evolution of the planning was the effort to turn the dwelling around as much as possible so that the living-rooms might face the green court instead of the street. Limitations imposed by the street plan and code restrictions prevented this being carried out to the degree later achieved at Radburn or Chatham Village in Pittsburgh. The problems involved will be discussed when we come to Radburn, but at any rate in Sunnyside it was often possible to place the living-porch at the garden side even though the living-rooms themselves remained toward the street.

APARTMENT-HOUSES IN SUNNYSIDE

Apartment-houses were generally located near the transit lines, both for convenience of the types of families that were expected to occupy them, and in anticipation of higher assessed valuation for such properties. Wilson Court, the last apartment built in Sunnyside Gardens proper, was located on half of a block not entirely owned by the Corporation, and possesses only a partial garden court, while all others are of the full Garden Apartment type,



•FIRST DEVELOPMENT OF CITY HOUSING CORPORATION
•AT SUNNYSIDE LONG ISLAND CITY•

Block plan of first section at Sunnyside, in which one-family and two-family two-story dwellings, and three-story apartments, are combined around a block interior with play space for children of various ages and adults. Play space for the later units was provided in Sunnyside Park, it being found somewhat unsatisfactory to combine play space for children and adults

and completely surround their gardens. The Phipps Garden Apartments, built later to occupy a part of the original Sunnyside tract, are an exception to the general rule with respect to location, being removed by several blocks from the subway. This exception was decided on when early studies revealed that grade conditions of this unfavorably sloping site were such as to require excessive costs for sewerage and drainage if devoted to smaller dwellings.

Co-operative apartments, which were included in the programs of the first two years, enjoyed only a qualified popularity, in spite of the thrifty living and sound investment which they offered. Although these co-operative apartments represented the lowest-cost dwellings in Sunnyside (and if tax exemption had been available would have been the lowest-priced dwelling space built anywhere in New York during this period), they have never been as popular as their low cost might have led one to expect. This is explained by the experience here and elsewhere that the lower-income groups who predominated in the earlier period do not have enough general experience in financial matters to appreciate eventual advantages of co-operative ownership, and are more content either to rent or to enjoy the feeling of outright independent ownership.

The notable success of certain projects under the State Housing Board and other moderate-cost co-operative projects, are not attributable to any physical or financial advantage. Their success must rather be ascribed to an economic

or racial solidarity among the groups housed, such as the Amalgamated Clothing Workers or the Negro occupants of The Paul Dunbar Apartments in Harlem, New York City—a solidarity which goes far toward insuring the success of a well-conceived co-operative project for these groups.

RECREATION AND COMMUNITY FACILITIES

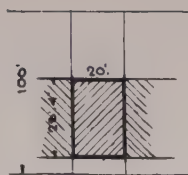
The theory at first was that each block should contain its complete quota of play space, not only for the smallest children but also at least for the medium-sized, and for adults in the form of tennis courts, etc. The plan of the first unit (page 90) shows this organization, which later proved impractical. It gave more than enough space for play area for the small children, while the more noisy play of larger children could more properly be removed to a special playground. This arrangement had the additional advantage of providing a play instructor so necessary to youngsters of this age. Likewise, the tennis court brought an undesirable number of people to the block court, who were apt to remain after dark and disturb adjoining occupants by the continuance of that animated discussion which is so desirable in its proper place. The eventual provision of a three-acre park took the place of the larger interior block areas, leaving in the residential block only the narrow park strips with small children's play courts.

The variety, spontaneity, and vitality of the residents' community activities at Sunnyside, which has often been remarked, arises from the variety of families living there, a variety possible only by virtue of the diversity in dwelling types. But we may properly note and commend the policy of City Housing Corporation, at both Sunnyside and Radburn, of avoiding paternalistic forcing or "pepping-up" of such activities with the purpose of "showing off" these model communities. The astonishingly wide range of resident organizations and interests has been the sincere expression of what the residents wished to engage in and to support, whether it were a garden club, a dramatics group, or a medium for the co-operative purchase of paint and lawn fertilizer.

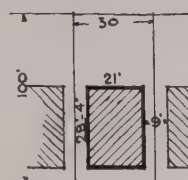
FACTORS IN SALE OF ROW HOUSES

Popular distrust of the row dwelling was neither expected nor encountered at Sunnyside, since New York's tradition has long included it, and it was quickly accepted on the basis of sale

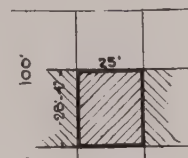
« ARCHITECTURE »



Problem: Given an interior row house for a lot 20 by 100 feet, to cost \$5,660 without carrying charges or selling costs; how can a better house be gained by spending \$750 more?



To set the house on its own lot 30 by 100 feet with 9 feet for both side yards adds \$965 for side walls, and \$455 for lot. See table, page 94. The gain will be a few windows on narrow side yards looking into the neighbors' windows, and the expenditure of \$670 more than was desired



Or, add 5 feet to width of house in the row group, adding \$500 more for building, \$220 more for land, and \$30 for more windows—a total of \$750. Result: 25 per cent more room on both floors

rather than rental. Certain technical considerations deriving from the attached dwelling had, however, always to be borne in mind during the planning of the project. A paramount requirement was that of simple and legally describable property lines, both with respect to the ground plot and in relation to the junction of party walls, particularly at offsets, etc. It was desired, but not possible, to avoid the use by two families of a single entry-way or porch requiring painting or upkeep. The inevitable discrepancies which have arisen where one family paints regularly and the other does not, while not serious, have been one of the noticeable drawbacks at Sunnyside. This difficulty was later partially overcome by avoiding the use of wooden porches.

Other legal considerations involved the easement provisions for common access walks, utility lines, and for protection of window exposures against encroaching additions to buildings. Forty-year easements preserve the common open use of central court gardens, and deed restrictions require architectural approval of any exterior alterations or additions to the dwellings. All questions arising from the enforcement of deed restrictions are decided by a committee of trustees elected by the owners of a given block, and on which the Corporation has one representative.

RENT

There are contrasting advantages and disadvantages in a rental policy, with "company" title and authority. The company can secure economical and uniform upkeep; it can automatically preserve the proper use and can maintain the community atmosphere; it can permit the

tenants to remain mobile, as modern life often requires. These advantages suggest that home ownership is no *sine qua non* of good housing or of satisfactory home environment. A still greater advantage of renting is that it favors advancement in design. Property lines no longer stand in the way of adjustments between two adjoining diverse units. For purposes of sale we need some new form of joint or stock ownership that does not require deed-line limitations. While not essential to group housing, such a form would be distinctly useful. Perhaps the best example in the past of design fully liberated from the restraints of deed ownerships is the interesting development at St. Martin's, Philadelphia—though this is a high-class community. Some parts of Mariemont, Ohio, are of interest, and the subject is completely demonstrated in the recent project of Chatham Village described in detail in this section.

HOW DID SUNNYSIDE TURN OUT?

It will be asked: who actually came to live at Sunnyside? Did it develop, like so many other housing projects for those with moderate incomes, more or less into a rich man's colony? The sales emphasis was addressed to moderately skilled manual or trade workers, many of foreign birth, and to various grades of the white-collar group. The range has been from policemen, chauffeurs, taxi-drivers, and mechanics of various trades to professional and business people. It is interesting to note that the predominant sales in later years were to these professional, artistic, literary, and business people, not in any way because prices had got beyond the level aimed at, but *because Sunnyside offered the only decent and physically attractive community for living in that they could find within any reasonable economic limit in the metropolitan region.* That Sunnyside is not a rich man's community may be seen from the median family income of about \$3000 reported in a survey of the community made in 1926. It has come closer to housing adequately the average wage-earner and white-collar worker than any other desirably equipped metropolitan community.

Sunnyside has offered answers to a number of knotty problems in urban housing, and put its answers to the test. Not only its beginning but its admirable continuance prove that a fair-sized community of 1,000 families, more or less spread over 50 to 70 acres, can acquire an entirely new community atmosphere and spirit. In this respect it is sharply differentiated from

the surrounding area. Three distinct types of dwellings are successfully related: single-family, small multi-family, and garden apartments. A working relationship has been maintained between owners of single houses, owners of two-family houses and their tenants, and the tenants of the company in the larger apartment units. These relations created obvious difficulties at first. There were human problems of the same sort as those raised by the deed restrictions, problems which required responsibility on the part of owners and led to the appointment of trustees within each block. The neighborly consideration which these efforts called forth, along with the physical advantages of the plan, helped to weld Sunnyside into a thoroughly conscious and workable community unparalleled in any similar experiment in this country.

In addition to these important social considerations, there were, of course, many minor details which called for painstaking solution in the field of technical organization. It is possible here to cover only a limited number of the most typical of these factors.

YARD AND SERVICE ORGANIZATION

The fact that the row dwelling cannot have the customary rear service entrance through the side yard, while it enhances quiet and privacy, also raises fundamental questions of service and access. Where an ash-producing fuel is used, as at Sunnyside, basement access is necessary and must be provided either through front areaways, by walks between groups to rear yard walk entranceways or by service lanes run between cul-de-sacs perpendicular to the street to reach areaways at the rear of houses. The latter arrangement is superior for access to laundry-drying yards and for delivery of ice if ice is used. The fully logical plan for row houses with traditional heating and ice-delivery is an arrangement in which kitchens and services face the street or access lane. This simplifies service circulation and preserves a central undisturbed court for living-frontage. It is, however, pointed out elsewhere how current evolutions in heating and other services have largely removed the need for frontage directly on the street.

Garages might be built integral with the row house where the lots are relatively wide, say 30 feet or so, with the service front of the house definitely turned toward the street. The danger of frequent automobile exits remains a factor to consider. In narrower plans, the garage must be provided elsewhere, unless, as at Chatham Vil-

lage and parts of Radburn, a hillside situation permits the placement of garages in the basement. Garage compounds may be concentrated at focal points, either within each block or on special nearby sites of small size or special shape unsuitable for dwelling use.

The disadvantage of having the family car at a slight distance from the house is compensated for by the absence of noise and danger, and by the improved appearance and use of the inner block park. The cost equalization of this scheme for garages has been explained previously.

PARTY-WALLS

Sound-proof party walls of reasonable cost are the outstanding constructional requirement of the row house. Neglect of this element will delay the popularization of the group dwelling more than any other single factor. No entirely satisfactory available form of party wall has yet been evolved for a low-cost construction, but the cinder concrete block as used at Chatham Village is a marked improvement on either brick or the usual concrete block wall.

FUNCTIONAL CHARACTERISTICS AND ADVANTAGES

Privacy against both sight and sound is greatly enhanced in the row dwelling through the abolition of the customary narrow side yard with windows opening on dwellings only a few feet away, and through the absence of noise from intruding automobiles and deliveries at the sides and rear.

Actual outlook and sunlight are superior to those of closely or even moderately spaced free-standing houses. All vistas are concentrated in the direction of larger open spaces, which with decent planning become attractive to the eye. Ample window area for light and ventilation is easily provided on these two exposures. The use of the full lot width and shallow building depth permits more livable room arrangements than with free-standing dwellings on the same or somewhat greater lot widths. There are no dimly lighted, stuffy side rooms, and the aggregate of space withdrawn from side yards contributes in large measure to the greater general openness.

Group dwellings must, however, be properly oriented. It is obvious that since they have but two sides exposed, their direction must be such that it will take advantage of sun and summer breeze. This will affect both the direction in which the building groups run and the position

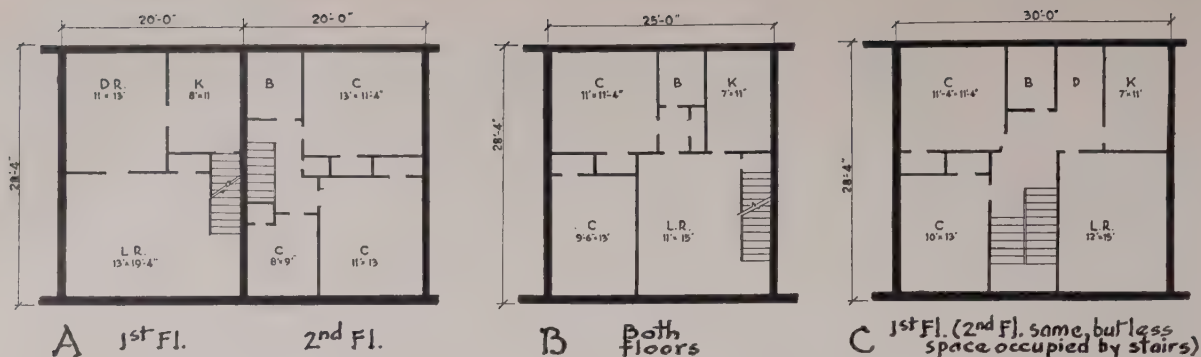
of the rooms themselves. The former will vary with climatic conditions; the latter may be accomplished in reasonably shallow depth, broad-front building space such as is here advocated, and has been observed in recent good row house design. However, there is reason to believe from experience with certain modern German row houses that, given this proper orientation, it is possible to secure a more positive ventilation with openings confined to two opposite sides of the building than may be had through windows on two adjoining sides of a room. It seems apparent also that there are certain definite advantages in a comparatively shallow room with a sufficient amount of light from a single direction. In this connection it is interesting to observe certain modern free-standing houses in Germany built precisely in this manner, having two side walls entirely without windows.

Openness and privacy are not dependent only upon actual spacing but also upon relation of space to outlook. A row house 25 feet wide has a far better relation to an equivalent open yard than an 18-foot detached house on a 25-foot lot. A well-planned community of group dwellings will produce a greater effect of openness than the provision of the same area per family in any type of detached planning. (Consider the unusual openness of English houses at twelve families per acre and their extensive gardens and outlook!) The row house brings to mind associations with crowding only because of the parsimony of the Philadelphia builder.

TECHNICAL ANALYSIS AND CRITICISM AT SUNNYSIDE

The insistence of the directing architects upon constant and continued experimentation at Sunnyside resulted in a certain degree of annual progress, and in the application of those new principles which gradually evolved through the technical process of design. This factor of progress was essentially limited by the lack of actual experience on the part of the designers, as well as by the dearth of similar experience or at least recorded experience, elsewhere in this country. Inasmuch as the company was organized with the express intention of eventually building a garden city, the architects, in 1924, made a trip to England specifically to study the experience in the two existing English Garden Cities up to that time.

Another factor that held back the early evolution of the design and swayed its character was the lack of cost experience elsewhere. The



ITEM	A - SINGLE-FAMILY HOUSE			B - SERVICED 2-FAMILY HOUSE (d)			C - NON-SERVICED 2-FAMILY HOUSE (e)		
	Interior Row	End Row or Semi-Detached	Detached House	Interior Row	End Row or Semi-Detached	Detached House	Interior Row	End Row or Semi-Detached	Detached House
Size.....	20x28.4	20.6x28.4	21x28.4	25x28.4	25.6x28.4	26x28.4	30x28.4	30.6x28.4	31x28.4
Cu. Ft. @ 20¢.....	17,000	17,425	17,900	21,240	21,665	22,140	25,500	25,925	26,400
Net Cubage Cost.....	\$3,400	\$3,485	\$3,580	\$4,248	\$4,333	\$4,428	\$5,100	\$5,185	\$5,280
Uniform Items (a).....	\$1,420	\$1,420	\$1,420	\$1,420	\$1,420	\$1,420	\$1,420	\$1,420	\$1,420
End Wall.....	....	\$450	\$450	....	\$450	\$450	....	\$450	\$450
End Wall, Half Chimney.....	....	....	\$515	....	....	\$515	....	....	\$515
Double Equipment (b).....	....	....	....	\$775	\$775	\$775	\$1,200(y)	\$1,200	\$1,200
Total Building Cost....	\$4,820	\$5,355	\$5,965	\$6,443	\$6,978	\$7,588	\$7,720	\$8,255	\$8,875
(L) %.....	100	111	124	100	108	118	100	107	115
Lot Size.....	20x100	30x100	35x100	25x100	35x100	40x100	30x100	40x100	45x100
Lot Cost, Improved (c).....	\$840	\$1,270	\$1,475(x)	\$1,060	\$1,450	\$1,655(x)	\$1,270	\$1,630	\$1,835(x)
Total Cost.....	\$5,660	\$6,625	\$7,440	\$7,503	\$8,428	\$9,243	\$8,990	\$9,885	\$10,710
Cost per Family.....	\$5,660	\$6,625	\$7,440	\$3,751	\$4,214	\$4,621	\$4,495	\$4,962	\$5,355
(M) %.....	100	117	131	100	112	123	100	110	119
(N) %.....	76	89	100	81	91	100	84	92	100
(O) %.....	100	117	131	66	75	82	79	87	95

(a) Uniform Items: Stairs, heating (except radiation), plumbing stack and fixtures, bath tiling, kitchen equipment. Porch costs omitted from all types.

(b) Double Equipment: Extra bath and kitchen, special stair hall.

(c) Lot cost is based upon land at 10 cents per square foot in lot, with all public improvements and yard work amounting to about \$40 per front foot.

(d) Serviced two-family house is one in which first-floor occupant provides heat, hot water, and janitor service for second floor.

(e) Non-serviced two-family house is one with separate heating plants and separate basement stairs.

(x) \$25 added to basic front-foot cost of any lot for free-standing house, for side yard improvements.

(y) Extra heater and special stairs.

limited type of cost record kept by the general contractor furnished no adequate guide.

Because of this situation the management permitted me, in the winter of 1925-26, to make a critical cost study of the projects then under way. It so turned out that this was the most advantageous period in the work for making such a study, because this winter's construction consisted of only one general type of development in one general location. The work started advantageously about the middle of August and went forward consecutively except for the interruptions of a severe winter. For the spring market there were completed some 270

dwelling in one-family, two-family, and three-family units, representing about one and a half million dollars' worth of construction.

The cost data collected represented perhaps the most valuable experience and the best basis for a technic of cost accounting that has been recorded either here or abroad. The subject is to be treated more fully in the manual section devoted to "Cost Accounting." The discoveries made not only affected design at Sunnyside, but proved the value of records continuously kept and analyzed by every agency engaged in any form of large-scale housing. The above cost table illustrates their application.

◀ ARCHITECTURE ▶

RADBURN

Though Sunnyside had carved a new figure within the hard shell of the city, it was not a garden town. There was still the desire to see what might be done, in the United States, comparable to Letchworth and Welwyn, given a free hand. Even so, English conditions could only be approximated. The permanent surrounding green agricultural belt, characteristic of the true Garden City, was not obtainable at Radburn. There were only limited possibilities



Plot plan of residential section at Radburn. Here are shown the safety-street plan and the arrangement of house groups on closed-end streets. Clarence S. Stein and Henry Wright, architects associated

for purchasing the necessary land, although, in compensation, there was some protection offered the town by the adjoining stream, country club use of surrounding area, and by other factors. Where Radburn retreated from the English ideal, it nevertheless made advances of its own. It was both planned and advertised as the "Town for the Motor Age."

May we assume that some of the contributions to the larger field of town planning are familiar through wide publication and need not be repeated here? There are, however, certain aspects of the experiment, bearing on the technique of community housing, on which attention might profitably be centred.

Radburn was laid out in "super-blocks,"

each enclosing from 30 to 50 acres. Though extremely different in appearance, they directly extended a Sunnyside principle, that of the central park. The shape of the block and that of the park were now freed from the arbitrary restriction of the city map. The cul-de-sac layout of minor service streets was also derived from Sunnyside and from English practice. It reduces the per-family cost of street improvements, provides seclusion from street noise and danger, and completely segregates pedestrian from vehicular traffic. It also makes possible the efficient use of a wide periphery of the super-block, leaving a sizable internal block "core." This core is not impinged upon by streets, it is freed from sharing in their improvement costs, and can serve as a sheltered park.

EVOLUTION OF DWELLING TYPES

Most of the houses are free-standing, single-family ones. Since the community was suburban, there had to be storage space for cars, so far as possible integral with the house and later with the two-family unit. The policy was one of sale. This was necessitated by the competition with other such suburban dwellings, and by the exigencies of securing needed mortgage loans. Too definite an adherence to a sales policy was undoubtedly a handicap to the 1930-31 program, when renting would actually have been the easier expedient. By that time the project included a fair proportion of equipped row houses at a low price; but the families at the income level to which these houses were addressed felt too much uncertainty in their financial outlook to undertake the permanent obligations of purchase. They would have been more ready to pay the necessary rentals, as experience elsewhere during this period proved.

The row house was not introduced at Radburn until the third year, and then with hesitation, since suburban people were accustomed only to the purchase of free-standing houses. Its inclusion was forced by the desire for reaching lower cost levels. The opinion of the management and the designers, on the basis of well-demonstrated experience, was that such group dwellings provided the only means of attaining cost reduction.

As a matter of fact, the experiment at Radburn was greatly handicapped by limitations of thought to the point of progress that had been reached at Sunnyside, where the factors of land and building cost had previously required a few tight and relatively narrow forms of row house.



Here are two examples of group planning at Radburn. In the upper illustration there are groups of four single-family dwellings, with basement garages on the far side. James Renwick Thomson, architect

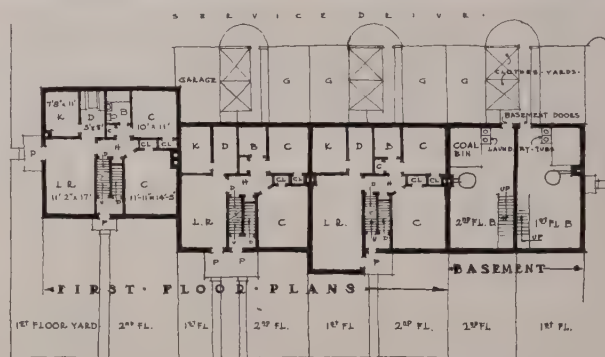
At the right, a group of four two-family flat dwellings which have individual stairs to half the basement for each family, accommodating individual heating plants and laundries



These at Radburn were hesitatingly expanded from $17\frac{1}{2}$ to only $18\frac{1}{2}$ feet. The making of these plans unfortunately failed fully to appreciate the implications of the cost analysis so carefully built up at Sunnyside. The use of this analysis later at Chatham Village showed—as might already have been clear at Radburn—that the $18\frac{1}{2}$ -foot Radburn row house should by all means have been expanded to 20 feet. This would have given a third bedroom and permitted the other rooms to be proportionately improved in the \$8000 house class, for an added building cost of only \$150 and an added land cost of not more than \$75. In other words, it was certainly poor policy to handicap this experimental use of the group house when a 3 per cent added building cost and a scarcely larger total addition to the sales cost, including land, would have added 12 per cent more room within the unit and removed some of its most unfortunate plan limitations. These limitations included, incidentally, the fact that in the Radburn house, with its basement garage, the entrance for both the owner and the occasional visitor frequently was by means of the cellar stairs, which led only to the kitchen on the main floor. The greater

width of plan as adopted later at Chatham Village obviated this limitation.

Small multi-family dwellings in the form of two-story flats for four and eight families in each building were also built at Radburn. But these type of dwellings were built for rent by the company and not for sale. At Sunnyside the two-family dwelling had conformed to New York precedents, by which one family on the lower floor owns the whole house and furnishes complete service to the upper flat. In such an arrangement sale is obviously neces-



Group plan of the four attached two-family flats illustrated above. Fuel is received through the end of garage next to each basement space. Clarence S. Stein, architect

sary. At Radburn, on the contrary, the families on the two floors were given complete autonomy, in order that ownership might be retained by the corporation. This required an expansion of plan and rearrangement, giving each family part of the basement with separate entrance, separate heating plants, water heating, and other services.* Some of this duplication was advantageous in giving the second-story tenant

* See plans for the two types of flats with table of costs on page 94.

better access to the yard and to laundry facilities; but the duplication of stairs, heating plant, etc., required by the company rental policy to obviate the necessity of one tenant doing janitor service for another resulted in a definite increase in the cost of the building per family housed.

Here again the Sunnyside cost analysis had not been fully exploited. The designers overlooked an alternative possibility. Attractive as the latest dwellings at Radburn are as they stand, arranged (see illustration) as an eight-family group, with each family occupying a $4\frac{1}{2}$ -room flat on one of two floors, the costs had been increased to a point where the flat arrangement was no longer an economy. Thus, while the Radburn examples of two-family dwellings constitute a very definite advance in exterior design, the dual facilities in these dwellings, while avoiding certain difficulties in the Sunnyside types, increased the per-family cost to a point approximately equal to a small ($4\frac{1}{2}$ -room) two-story row house as built later at Chatham Village. The latter would have had advantages of individual yards and private garages which would have reduced some of the company upkeep expense, so that rents could have been no more for the individual house, and undoubtedly their popularity would have been greater. In reaching this conclusion we must not condemn the flat altogether. In its more simple and less costly form at Sunnyside, it formed the cheapest type of small dwelling built either at Sunnyside or at Radburn and will, within its limitations, provide the same cost advantages elsewhere. Its difficulties as a rental unit may be overcome by some type of heating apparatus for upper and lower tenants separately. (For cost comparison see table in *The Architectural Record*, December, 1932.)

It was, however, not until the study for the Chatham Village project that these various cost comparisons became evident. Their release of the previous restrictions caused by the sales objective at Sunnyside and Radburn, and a realization of the value of the Sunnyside cost analysis, set the technical mind free of inhibitions and gave a new impetus to imaginative planning. There was the further factor in the Chatham Village studies, that the consulting architects were made responsible for estimating the full service costs for the rental dwellings rather than only the mere construction cost.

It is of the utmost importance to the architectural profession to employ such analysis—not merely the conclusions advanced here, which, being the result of individual work, can-

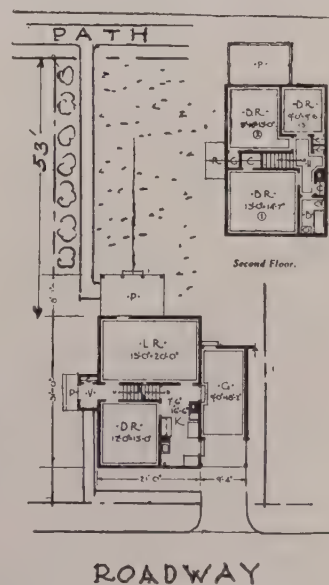
not be exhaustive—but careful gathering of actual rather than estimated cost should provide a sound basis for freer and more imaginative progress augmented by mutual exchange and constant refinement. Such processes are the *sine qua non* of any housing technic worth striving for. For the present, the reader wishing to follow up the subject of cost analysis is referred to Appendix No. 6 of the Report of the Committee on Design, The President's Conference on Home Building and Home Ownership, 1931, and *The Architectural Record*, December, 1931, December, 1932, and March, 1932.

Those using these references are here strongly urged to prepare corresponding material from their own experience and for their own locality, since the cost units or tables presented cannot, in the nature of the case, do more than illustrate view-point and method. A crib-book use of tables and statistics is quite as pernicious as the unaltered and unimaginative cribbing of stylistic details.

REVERSING THE HOUSE FRONT

An outstanding achievement at Radburn was the reversal of the house front in moderate-cost dwellings. The street exists for service. In the days of leisurely carriages it was pleasant to look up and down the street to follow the town's social life. This is a dubious advantage in these days of the automobile. The street-fronting entrance that began as a convenience survives mainly as useless display. That the street should once more be relegated to the position of a service factor was an idea of many designers, including myself, long before the de-

One of the early plans for single-family detached houses at Radburn. It is provided with three separate house entrances. Later plans eliminated one entrance



velopment of the unique Radburn street and "lane" plan. The evolution of this idea is covered in an article in *The Western Architect* for September, 1930. Unfortunately the full economics of the plan have not yet been worked out in an exposition that would be available to every designer. There is no room for it here, but only for a word of comment.

What seemed a very simple process, that of turning the free-standing house around to face the garden instead of the street, actually proved to be complicated, and required months of study. The rational form is not the easiest, when irrational forms have become the basis of far-ramifying customs. Even when the purchaser is enthusiastic over the change, his banker may remain hostile. The banker is often an enthusiastic exponent of "what the public wants"—namely nothing different.

The usual house with its front to the street wastes its opportunity to be well connected with the garden. At Sunnyside the first steps toward eliminating this waste had been taken, as already recounted, by the shift of the living-porch. The reversal of the whole plan at Radburn was one of the chief contributions there to housing in general. At Chatham Village we shall see the principle carried forward to a yet higher development.

CO-ORDINATING THE WORK OF TECHNICIANS

In the ordinary free-standing house, so small a matter as providing roof drainage is very simply cared for. Gutters are hung, downspouts are led, as the case may be, to the house drain, the dry well, or splash block; that is all. Not so in group housing. Here the architect, the engineer, and the constructor, to say nothing of the owner—all have conflicting fingers in the pie. The architect would wish to pitch and vary his roofs for mass effects, and place his leaders for inconspicuousness or symmetry; the engineer, charged with draining a given area to storm sewers, would insist that discharges from roofs be brought around as far as possible to the "lane" side of the house, from which the run-off to street catch-basins could take place on the surface of the paved service lane. This in turn raises the question of ice formation and danger; dry-well disposal may prevent other peculiar difficulties. The construction department, meanwhile, under pressure to keep costs down, would argue for the minimum number and maximum spacing of the

leaders, while the owner-yet-to-come would be principally concerned with whether any of the roof above his house would drain to the leaders of his neighbor and cause trouble, or embarrassment, if his neighbor were slack about repairs. To make a long story short, it became a recognized policy and part of the regular sequence in designing any group of houses to require that a roof-drainage plan be evolved synchronously with grade plans, utility plans, walk plans, excavation plans, and all the rest. Such a drainage plan had to be jointly agreed upon by all three technicians involved, while a weather eye was kept on this, as on every other item, by the sales department.

The securing of visual vistas in the completed house groups was another endeavor in which every one had to learn by experience. In a number of places in the early groups it was found that even the most diligent attempts to visualize final effects from plans or even from perspectives or models, had failed to reveal all flaws. In spite of everything, a pair of garage doors would still constitute the closure for a garden view, or a telephone pole would locate itself irritatingly in the midst of an otherwise attractive outlook. At Chatham Village, later on, all utilities were fortunately carried underground without expense to the project itself; but as work progressed at Radburn the difficulty was solved by making and enforcing a rigorous plan which placed all poles, hydrants, and other such protrusions in the most inoffensive positions consistent with efficiency. It was also found that in certain vistas the shortcomings could have been "planted out," or the potentialities enhanced if the landscape architect and others had been apprised in time by fully co-ordinated plans. Thus it became the policy in later work to study carefully the vistas in all open spaces, including even the relation of minor openings between the houses in one tier to those in succeeding tiers, in order that all offsets, planting, and other such elements might be visualized before it was too late.

RADBURN IN USE, THE RADBURN ASSOCIATION

Not the least important aspect of Radburn is the extent to which the provision of the rather elaborate though practical features of its new street plan and block organization, and particularly its system of central parks, stimulated the growth of community activities and co-operation. If these had been less whole-

heartedly carried through, it would have been possible that the interior parks would have remained unused and neglected, as in many previous cases, even in certain English precedents. But the whole life of the community revolved around its central block park system. Once the motor-car was put away in the garage that was entered from the lane, the street was forgotten. All activities, including walking from one home to visit friends in another, took place over the park walks. Here children played because the things that attracted them were centred in the park or made accessible from its walks instead of from the streets.

These special provisions failed to conform to the usual locations in which the city government would naturally function. Their maintenance required a permanent organization with authority and ability to control them and keep them in condition. The Radburn Association, set up after an exhaustive study of similar though less comprehensive organizations elsewhere, holds the key to the present success of the project and to the largely voluntary resident clubs and other widespread community activities. At an assessment equal to one half (eventually a maximum) of the normal town taxes, the residents pay for a variety of services, such as park upkeep, walk lighting, play director, swimming-pool costs, including directors, association management, and legal expenses.

So satisfied were they with their bargain that, when costs of new dwellings during the early part of the depression had fallen to a point where the residents might have sacrificed their purchase contract and moved elsewhere at an actual cost advantage, they remained for the simple reason that nowhere else could they have

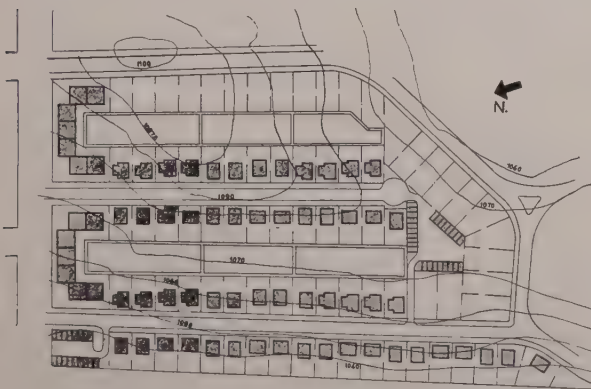
both a house and the community surroundings and advantages represented by the complete "Radburn Plan."

CHATHAM VILLAGE

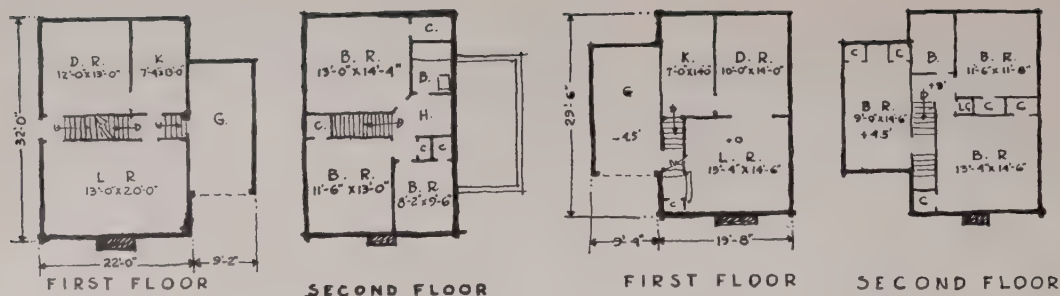
Chatham Village in Pittsburgh is the first, and apparently a very successful first, use of large foundation or trust funds as a capital investment in housing.

Mr. C. F. Lewis, the director of the Buhl Foundation, spent nearly two years studying the needs of Pittsburgh, and also checked up the experience of large-scale developments done under limited-dividend charters. After this he was convinced that an investment in housing would be thoroughly secure. Not until then did the closer study of the project begin.

The usual story at the time was that Pittsburgh was overbuilt. The investigation proved this statement to be a distortion. Whatever oversupply existed in certain high-priced dwelling types did not extend to dwellings within reach of moderate incomes. Indeed, so high were the rents that suitable space for these moderate incomes, particularly of the clerical groups, was almost non-existent. The full account of the survey has been published, along with the subsequent survey, by the Bureau of Business Administration, Pittsburgh University, which investigated directly the requirements of the clerical workers, their income capacity, and locations they principally occupied. The latter report is to be found as Appendix VI in the Report of the Committee on Large-Scale Operations of the President's Conference on Home Building and Home Ownership, 1931. This material will prove invaluable to those interested in housing problems of a similar nature.



Two schemes for Chatham Village in Pittsburgh. On the left, a solution which provides eighty six-room houses to sell at an average of approximately \$10,500. On the right, another scheme utilizing the interior row house. The 128 row houses, it was found, could be sold for between \$7,860 and \$9,042. This is the scheme finally adopted



At the left, plans for a pair of houses at Chatham Village to face the street, rising with a steep grade. The cross-section shown below makes clearer the relationship of the two

After the completion of the original survey, a search was made by men of experience, both in Pittsburgh and in limited-dividend housing in New York, for an appropriate site for a reasonably large development. The three sites finally considered all presented problems of hillside development. All three had remained unused, partly because of these physical difficulties. It was finally decided to erect, on the site at present occupied, a group of single-family houses to sell for not more than \$10,000 or at most \$12,000 apiece, on favorable time payments. It was anticipated that the low land cost would compensate at least in part for the unquestionably higher development costs entailed.

At this point the Foundation called in the architectural consultants to study the problem in terms of the general recommendations thus reached. The consultants were doubtful as to these premises from the outset. It did not seem that single detached houses could be brought within the income limits of the people to be housed. It was agreed, however, that they should first bend every effort to a solution in those terms. The early studies provided two schemes of allotment. In both, the lots were approximately forty feet wide and to be occupied by six-room brick houses, with, for the most part, built-in garages. These houses were based on the new Radburn types, but had to provide step-ups and step-downs to meet the steep gradients of the property.

Another type of house was arranged with two-story accommodations on four different



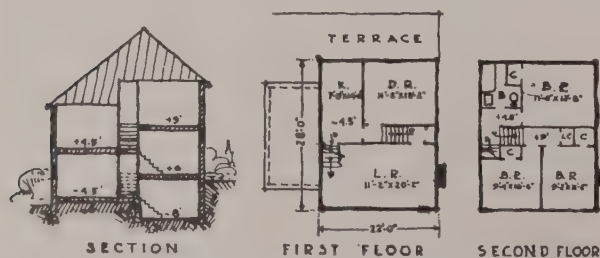
levels, with a half-flight drop between the front and back half of each dwelling, for use on the down-hill side of streets paralleling the contours. The two schemes of subdivision noted above were:

a. All lots to face the streets, which were to run approximately parallel to the contours, with a heavy rise in grade from the lower street to the one next above to be taken up in five different terraces, and

b. Lanes running perpendicular to a base entrance street that would be parallel to the contours, each lane rising the maximum possible for driveway purposes, with lots terracing at their side-lines, either individually or in pairs, as shown in diagrams.

An experienced local builder was asked to furnish estimates based on actual Radburn plans and specifications of similar type. These Radburn types were not recommended for copying, but were used as a working base from which the feasibility of the scheme could be judged as a whole. Plans would later have to be restudied in terms of plan details suited to Pittsburgh.

Carefully estimated in this fashion, the cost of the houses came to the high figure of \$9,500 to \$12,000, due to the unusually high construction costs for this city. Such prices would have required monthly payments, calculated on the basis of Sunnyside experience, of from \$75 to \$95 per month, not including heat. Although these costs actually fell within the prescribed range, they were uncomfortably near the top. The consultants therefore submitted an alternate plan, using the street system first mentioned above. Group houses were substituted for free-standing ones. The grouping of 4 to 8



Plans for a detached house on four levels, to occupy a lot in Chatham Village on the lower side of a street running with the contours

houses together permitted a total of 128 instead of 78 or 84 houses, the living-floor capacity per unit remaining almost equal. Selling prices could be reduced approximately 25 per cent.

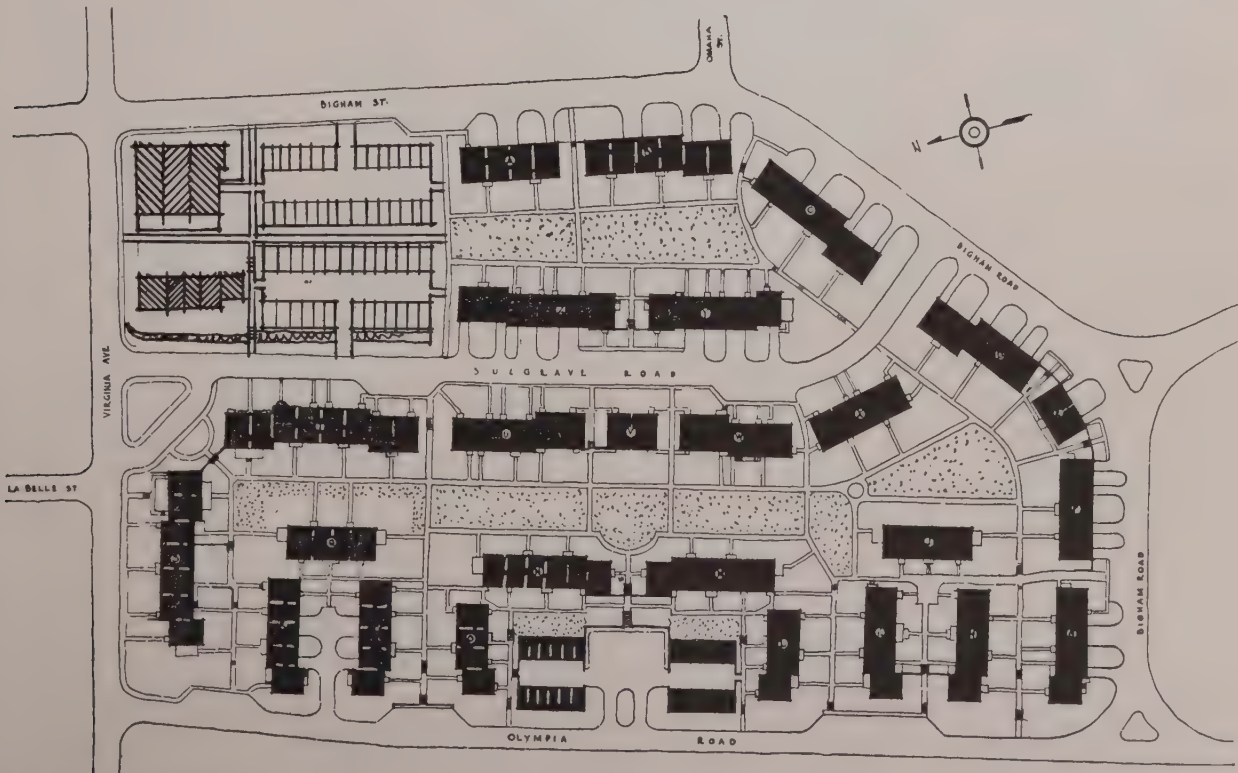
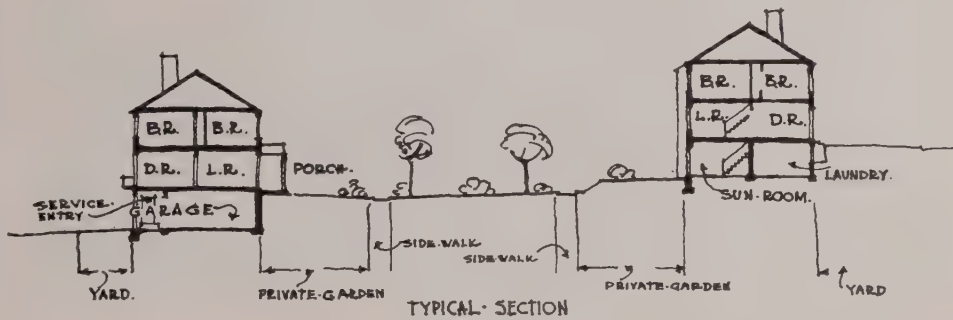
The alternative schemes were thoroughly studied by the Foundation Board. After careful consideration they instructed the consultants to develop a finished report on the basis of the grouped houses. Their dominating motive was far-sighted. Though it was improbable that the Pittsburgh home-seeker would accept houses in groups for purchase, yet it was thought better to build something *clearly within the price range of those needing the houses*, and if necessary to rent instead of attempting to sell. Indeed, upon more mature consideration, it was noted that there is no very great gap between renting and

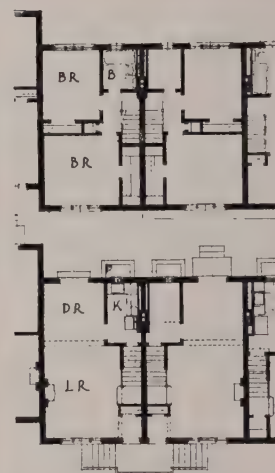
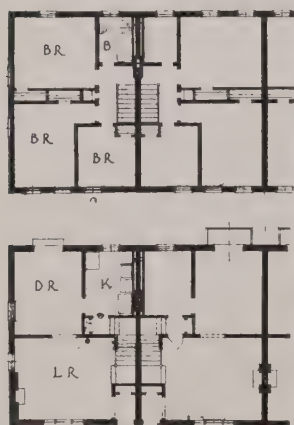
selling. In selling houses on long terms, the Foundation would not be relieved of responsibility any way for a long period of years. It might quite as well assume the responsibilities of ownership and management. This would not only give the Foundation better control of the project, but might prove actually more advantageous to those who were secured as its residents. Subsequent events have proved this step to have been very wise, and the limited experience to date indicates that the occupants are just as well if not better served and as happy as they would have been had they purchased.

To the technicians, the decision to rent was a relief. It removed many of the limits placed on their technical approach in previous "planned-to-sell" non-profit-making undertakings. The

Below, a general plan of the first unit of Chatham Village, showing interior park and walk system, the streets having parking bays. Cross-hatched portions show recent additions to the unit

At the right is a characteristic cross-section of the hillside block. The upper houses have basement sun-rooms while the lower ones have garages





At top of page, preliminary sketch of the garden side of Chatham Village group facing a slope of over 10 per cent. The vertical drops in elevation are less expensive than horizontal offsets introduced to relieve monotony in groups on flat land.

The floor plans show the two general types employed for the first unit of 125 houses—a six-room house and a four and a half room house. The former was developed in two depths of approximately 26 and 28 feet.

Previous plans at Sunnyside and Radburn had been 17½ and 18½ feet in width respectively. The third bedroom was very small. In this Chatham Village plan of 20½ feet front, the rooms are all larger and

the smallest bedroom rendered serviceable in size and furniture space. The hall between living-room and kitchen permits entrance from basement garage without traversing the kitchen.

At Sunnyside and Radburn it had been assumed, on the basis of incomplete analytical study, that a four and a half room suite must neces-

sarily be built as a flat to compete in cost with the six-room house. At Chatham Village, however, a very successful four and a half room house was developed to rent at about ten dollars below the six-room house, and proved especially popular.

The photographs show: above, a court running with the contours; below, part of group shown at top.

problem became how to design the best possible, most efficient, and most economically maintainable dwellings, not how to meet the usual idiosyncrasies of the inexperienced family undertaking a purchase contract.

Not the least important aspect of Chatham

Village was that it constituted the first careful adjustment of a low-cost housing development to a hillside. Although the consultants followed through the experience at Sunnyside and Radburn, a technic more or less new was necessary from the outset. On a hillside it was found that

you can secure a somewhat greater intensiveness of coverage without impairing openness and view. It was judged favorable, as it actually proved in experience, to spend liberally for a radical grading of the site into fewer, more or less regular, terrace levels, rather than make a lot of detailed adjustments by means of the final landscape treatment: in other words, to increase steam-shovel work and reduce hand power. Again, it was shown that grouped row houses could be fitted to hillsides with actually less expense than detached houses. One reason was the reduction in the number of terrace and step adjustments in spaces between dwellings. Another reason was the fact that the foundation wall of the row house formed a satisfactory retaining wall at much less expense than an independent wall without the weight and bracing added by the superimposed house structure. Naturally, orientation is a factor in this matter, and it was perhaps only by accident that the site of this first hillside development had a sufficiently favorable western exposure to permit these advantages to be taken.

The experience in this project is offered as a successful example of very necessary co-operation between a large number of agencies required in its procedure to the point of actual occupancy. The architects, as consultants, extended their original function to the point of interpreting both site and building costs into comparative rentals, taking into account financing, depreciation, and management. Their work was in no way intended to limit the work of the designing architects. Yet it was thorough enough to remain a reliable guide throughout all subsequent work. The consultant services were continued throughout the detailed design by both the architects and the engineers. Operations were held so close to the original cost estimates as to assure the Foundation at all times that the final results would conform to the rental figures set out in the original report.

The project suggests that 125 dwellings, the number completed in the first section, are enough to secure decided advantages through large-scale operations. For the greatest economy in management double the number might work better

and would also give a more thoroughly balanced community, although the present number is not bad.

Aside from its more technical aspects, the Chatham Village project has demonstrated two very important things.

First is the advantage of rental over individual ownership to both the company initiating the project and the ultimate occupants. The advantages in providing greater freedom in design have already been pointed out. But the conditions for successful rental entail the mutual interest of owner and tenant in maintaining the best service at the lowest rentals possible, as well as an assurance of permanency of the tenant so long as his conduct does not conflict with the character and objectives of the community.

Second is the demonstration that the type of "group housing" which at Chatham Village is, for the time being, confined to single-family row houses, need not conform to the usual standards of the locality if it has assured merits and superior features which are suitable to the groups to be housed. In fact, the Chatham Village experiment goes still further in demonstrating that our young people of the more well-to-do classes are not satisfied with their present housing accommodations. Their available choice now is between an expensive single house and a small residential type apartment. It is very certain that no amount of abstract argument could have convinced such young people that they should live in a "row house"; but when superior row houses were built at Chatham, including practically automatic heating made possible by natural gas, numbers of such young people migrated from their natural locations in the east end of Pittsburgh to Chatham Village, although its location in an old southwest section would have been the last place they might have thought of living. Chatham Village is unique today in that on June 1, 1933, it was 100 per cent occupied at rentals representing a moderate return on the investment and a depreciation reserve.*

*A very exhaustive study of the many practical architectural, engineering, and maintenance problems at Sunnyside, Raddburn, and Chatham Village will be found in the "Manual of Practice" section of the completed book.

VI. ENTER THE GROUP DWELLING

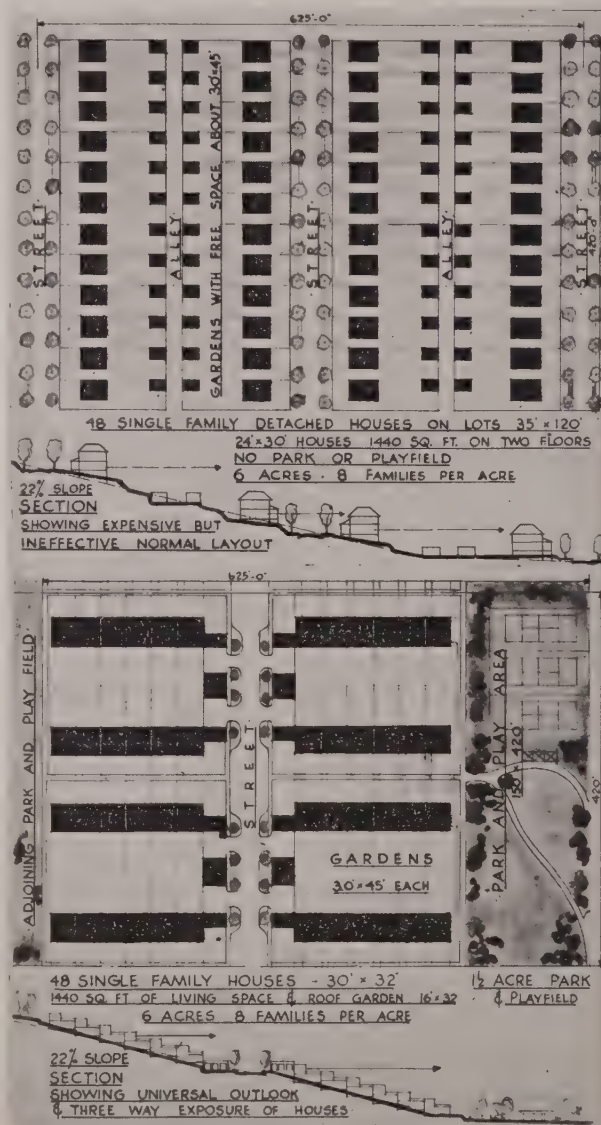
THROUGHOUT the history of the War housing movement, of Sunnyside, Radburn, and Chatham Village, there is the gradual development and improvement of the better-known forms of group row houses, two-family dwellings, and small apartments. But there emerges more than the improvement of familiar forms: there is an evolution embracing plans, servicing, and interrelationship, that forecasts the application of all the principles to some freer and more diverse form of emergent group dwelling, such as was described at the opening of the last chapter. Why should we go on, either confining our projects to one or another of these better-known types of homes, however valuable? And why fail to advance them all to a new position, in which, through some modern and adequate form of tenant-owner occupancy, they can satisfy requirements of a wider range? We need to provide not only for the diverse requirements of various types of family, but to consider this family as a developing, rather than a static, institution, so that its home must continue to satisfy its needs as these needs change. Moreover, why not provide for those equally deserving fragments and odd families that are a real part in the sum total of any actual community?

The changing human habits and attributes of the family have been dealt with previously; the changes in mechanical services for the home which render the apartment unnecessary and the group dwelling increasingly practical are to be presented later under the heading of "Evolutionary Factors." Let us here develop theoretically, or even practically in a few instances, the possibilities of a more comprehensive complement of group-housing facilities in the form of dwelling space, capable of wide variation but harmonious integration.

HILLSIDE GROUP HOUSING

The theoretical studies at the small summer school held at my New Jersey country home, in the summer of 1932, did not start out to do more than provide some interesting and provocative experimentation in site planning for a number of graduate students in architecture. The results, however, led to the discovery of a special technique for hillside housing, particularly for steep hillsides, which should in time open up a new

field for attractive small dwellings particularly suitable for young people, near high-class suburban communities. The uniform requirements set forth at the outset were that every living suite should have a distant horizontal outlook, preferably from its living-room, and that each should be related to its own garden, either at the



The struggle between two points of view that condition the whole future welfare of American housing. In the upper plan, to provide individual autonomy, the entire tract is divided into forty-eight house lots. In the lower plan the same number of houses are arranged in a pattern requiring one-half as much of street area and no alleys. Each house has an outlook over its neighbor. A one and one-half acre park is gained in the low land. (Architectural League exhibition of Hillside Housing)

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ground level or on a roof space of adequate dimensions.*

EVOLUTIONARY FACTORS WHICH PARTICULARLY ENHANCE THE EFFECTIVENESS OF THE GROUP DWELLING

SERVICE DEVELOPMENTS

Automatic refrigeration: This has now been perfected and simplified to the point where capital and use costs are little above those for ice refrigeration; the difference is easily compensated for by the better preservation of food and the greater flexibility of plans, through the elimination of awkward and objectionable ice-deliveries. It may be assumed that most desirable new housing will include this equipment.

Incineration: Small domestic incinerators, costing less than a hundred dollars for the mechanical unit, are now on the market, the flues for which can be economically associated with the necessary masonry walls of a group dwelling. The use of these flues in common by two or more families in group dwellings permits the use of incineration at an economic level where the free-standing single house could not afford it. Residual ash from these incinerators is estimated at about 5 per cent of the volume of the matter burned, which permits infrequent removal. Odor and smoke from properly installed incinerators of adequate size should prove negligible, but flying ash from papers, etc., must be guarded against by screening or other protection in the installation.

Heating with piped fuel: The experience of large model housing operations makes it increasingly clear that central heating plants for large buildings involve capital and wage costs which tend to outweigh the fuel efficiencies introduced. Partly in response to this observation there are being developed small individual heaters (using gas or oil, with the future probability of electric storage heaters to utilize cheap rates on off-peak loads) which operate at high efficiency with virtually no attention. These avoid the excessive capital and operating costs of large boiler plants, and in addition encourage thrift in the use of heat and hot water by rendering each family responsible for its own fuel bill. These heaters, in forms already available, need not be placed in the basement, but may under certain conditions occupy special closets or compartments on the living floors. This eliminates the necessity for

basement space except as used for garden-level apartments or storage space.

The extension of natural gas at low rates into many cities of the north central and eastern portions of the country brings this type of heating into the range of practicability over large areas, while reasonably cheap fuel oil is universally available. Heat-loss is characteristically low in group dwellings because of party walls and superimposed living floors, and the ease of insulating the smaller areas of exposed walls makes these types of heating equitable for group housing even where fuel costs may be slightly higher per B.t.u.

NEW FREEDOM IN BUILDING ORGANIZATION

All of the foregoing render the building plan itself more flexible and reduce the need for large apartments either on many floors or closely related in horizontal position, such as have been considered necessary in the past.

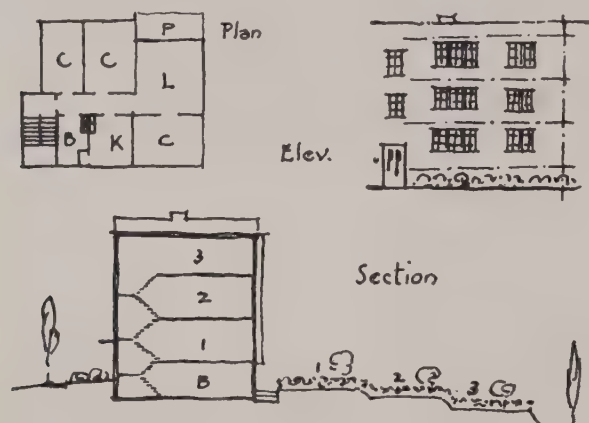
The incorporation of these service features endows with virtually all the convenience of the apartment-house the various forms of group dwellings, which retain a superior close relation to the ground, individual gardens, and greater privacy. Occupants may leave their homes unattended with no more thought for frozen pipes, the ice-man, or furnace-tenders, than they would in an apartment suite.

Freedom is gained for planning *circulation within the dwelling*. Where there is no need to carry ashes from the basement, or ice and garbage to and from the kitchen, rear service stairs (which have often been omitted from model housing projects even prior to these new service developments) are now wholly unnecessary, though many cities still do and may in future tend to retain them from habit or because of the requirements of archaic building codes. These latter should be modified. Fire egress by means of rear stairs, customary in three-story flats, is unnecessary in two-story buildings, and, in the special types of three-story buildings herein postulated, may likewise be unnecessary in view of fireproof construction developments, or may be provided by roof or horizontal fire-escape egress without complication of the building plan.

Street frontage for delivery access is no longer necessary, and the entire basis of house grouping with relation to the street can be entirely revised, with great gains in livability and economies of street costs. These should more than offset any additional costs incurred through any of the above-mentioned service facilities.

* The results of this study appeared as an exhibition at The Architectural League of New York and were printed in *The Architectural Record* for October, 1932.

In the article in June, 1933, *ARCHITECTURE* entitled "Are We Ready for a Housing Advance?" I gave great credit to the German architects and engineers for having solved in an admirable and progressively better way, in respect to access and orientation, the problems of community building as received by them. I claimed, however, that, good as these were as technical achievements, they were handicapped by the illogical assumptions which restricted their make-up to a combination of limited and segregated units, including, on the one hand, single-family row houses of an old-fashioned type, and on the other, repetitive modern apart-



Plan, elevation, and section of a very common type of four and a half room apartment—the Britz project in Berlin. The apartments are identical on each floor and throughout long building groups, the unit being about 30 by 32 feet. The section shows the basement access to gardens for each family

ments of very limited capacities and fulfilling a very definitely different set of requirements.

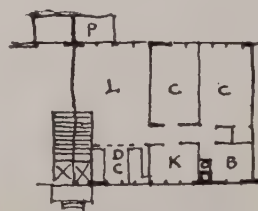
I then proceeded to suggest a set-up of assumptions which called for an intermingling in fact and in design of not only the above widely different housing types, but all the intermediate sizes and types of both one-story and two-story living suites, which might meet the varying needs of a diversified modern community. This extended to the considerations of method of rental or ownership, the latter necessarily on some joint-stock basis, and also to the amount and relationship to garden spaces and other community facilities.

In the above sketch I have shown how the very attractive group of apartments at Britz does provide somewhat inconveniently for garden spaces for every apartment suite even in a three-story building having apartments identical in size. Yet there is generous provision of space for the gardens which surround the houses, these being the units in the second type of dwellings used in this project.

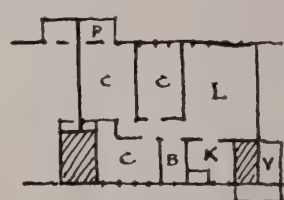
There followed in the article very rough suggestions as to how a variation from these illogical assumptions might be worked out in a three-story structure, which would be in the nature of the "Group Dwelling" as envisaged in this section of the book. Since the page arrangement in the article was such as to permit one to follow only with difficulty the explanation of the diagrams, they are reproduced here in more convenient form.

This and the opposite page carry the detailed plans and explanations, while at the bottom of the opposite page is the rough suggestion of the combination of the varied units into continuous building space. Community interest would be enhanced by variations in length and interrelation of such groups.

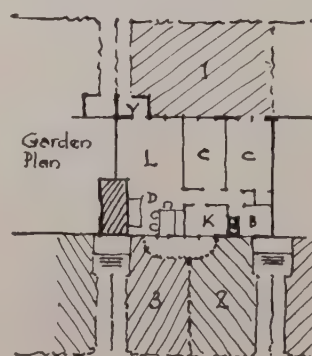
Our object is to replace the identical four and one-half room apartment units and uniform, segregated, single-family houses with a diversity of types. The first floor is dropped a few feet, to the top garden level; on the outside of the curve this puts it a few feet below the front yard. This will permit masking the minor rooms, which are placed on the side of the front yard and are shielded by a hedge. All entrances are directly at the exterior of the building. They are approached along paths that slope a little more steeply than the garden, reducing exterior



Plan of third floor

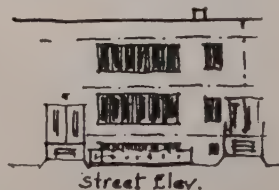


Plan of second floor

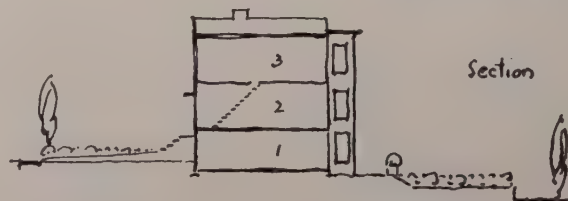


Garden Plan

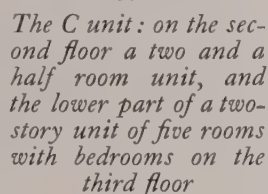
The above represents building unit A, described in the text. At the left is the plan of the first floor, showing the relationship of the gardens for each apartment



Street Elev.

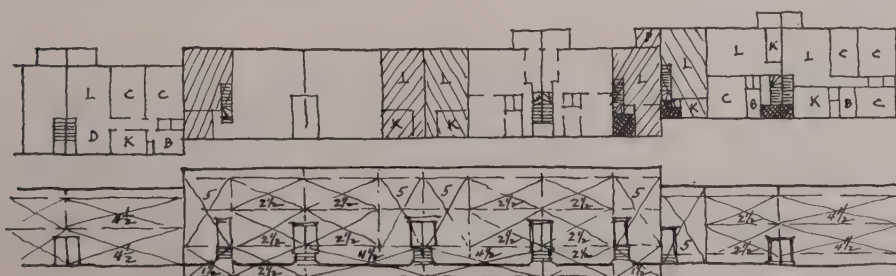


Section



With this preliminary modification, which gives all floors their direct outside entrance, and necessitates only one flight of internal stairway (from the second to the third floor), we are ready to vary our types. Three different building units have been evolved, called *A*, *B*, and *C*, all of the same width and interchangeable. Building *A* might have identical four and one-half room apartments on all floors if the vestibule entrance were shared by the second and third. To give these two floors separate entrances and direct access to their respective gardens, a variation can be introduced in the second floor, giving it a second vestibule and one more bedroom instead of the dining alcove shown on the standard plan.

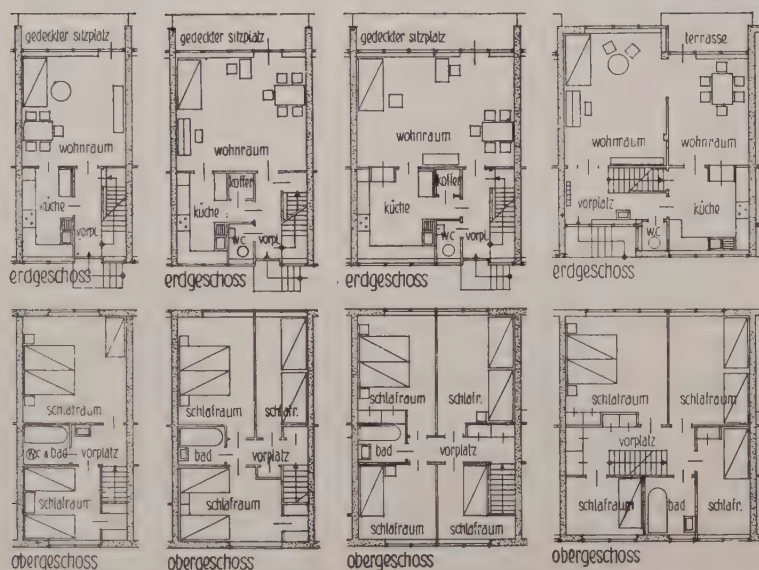
An excellent and almost unique illustration of many, though not all, of the proposed attributes of group dwellings has been actually in existence for a number of years at Neubühl, Zurich. The interesting conditions under which this development came into being as a group product on the part of certain of the younger architects is to be told elsewhere by another



Above, the four floor plans of the typical one-family house in the Britz group

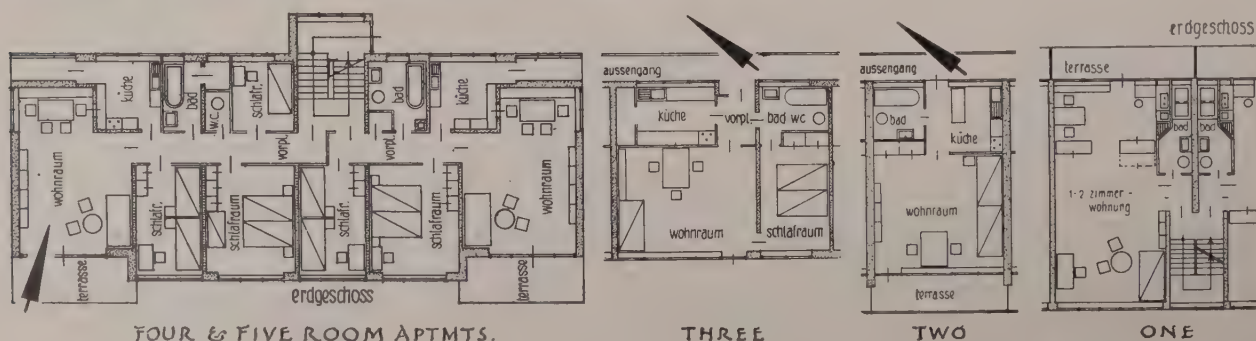
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author. It is illustrated here just sufficiently to show the wide range of dwellings in a project with scarcely 200 suites. Apartments range from one or two rooms to four or five, with the possibility, by the shift of a door, of a four-bedroom, six-room suite in one side of the larger apartment units. There are four sizes of single-family row houses. Here a hillside has been used in stepping down certain groups almost as drastically as in the theoretical examples mentioned.



All the illustrations on this page show the Neubühl housing project at Zurich, Switzerland, the joint product of a group of architects. A total of two hundred suites provides apartments of from one to six rooms and row dwellings of two, three, and four bedrooms. Tenants must also be stockholders. There is a 400 per cent variation in rents, but the illustration above, of a one-room apartment, indicates that apartments for the most modest rentals have all the quality of the larger ones. Each dwelling has a wide spread of windows toward the south.

The four sizes of single-family houses are shown herewith in plan, and below, plans of apartments in various sizes. The four and five-room apartments are easily changed to a combination of three and six



FOUR & FIVE ROOM APTMTS.

THREE

TWO

ONE

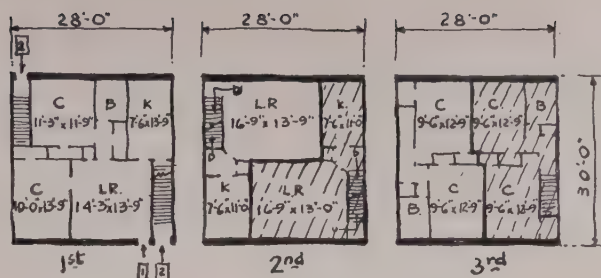
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GROUP DWELLINGS IN RECENT AMERICAN STUDIES

Finally we have to present some of the many recent plans developed by certain architects, based more or less upon my own theoretical studies at various times. Some of these antedated my article in the March, 1932, *Architectural Record*. This latter should be reviewed by students in connection with this study.

Mr. E. H. Klaber, architect, of Chicago, has from time to time made studies of the group row house in contrast with Chicago's usual three-story flats. Mr. Norman N. Rice, of Philadelphia, has performed the reverse service for that city.

In connection with a possible housing project, Mr. Clarence S. Stein, architect, of New York, has developed a fairly complete series of two- and three-story units for group dwellings without common halls or janitor service. The most promising of these is one suited best to building rows running north and south. In this case he obtains an efficient use of three-story space for three four-room suites—one on the ground floor and two running through from the second to the



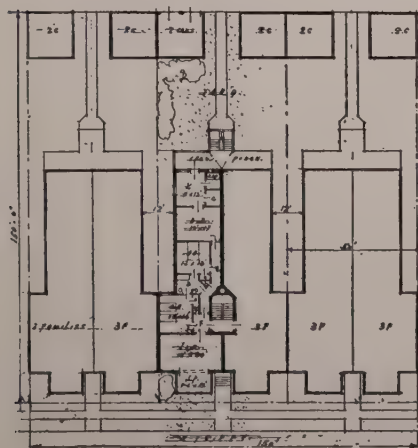
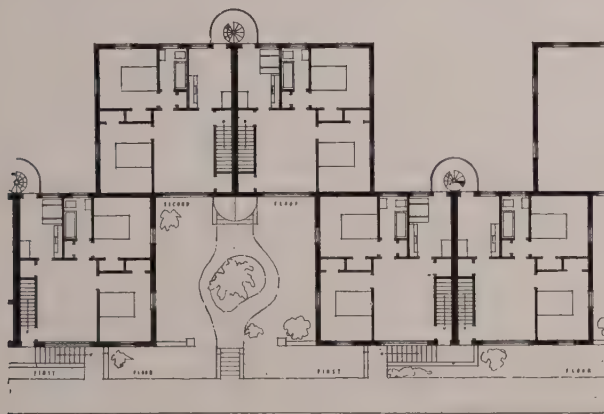
4-RM. APT MT.

4-RM DUPLEX APT MT.

An ingenious arrangement by Clarence S. Stein, architect, for a three-story three-family house with four-room flat below and two upper floors shared by two four-room duplexes

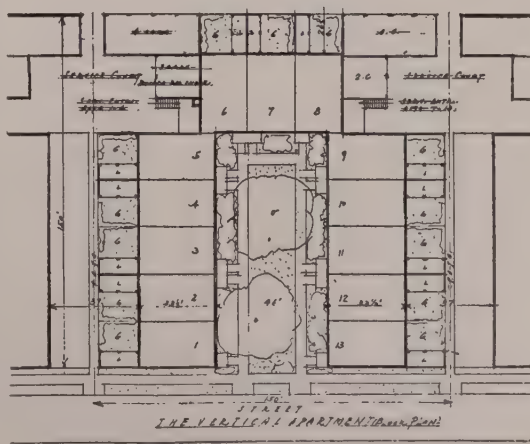
third floor with stair entrance from opposite sides of the building, and arranged so that there is full cross-draft on both the living and bedroom floors. There still remains the problem of grouping these unit plans into effective community organizations, with due reference to exposure, sunlight, access, recreation, and other living requirements.

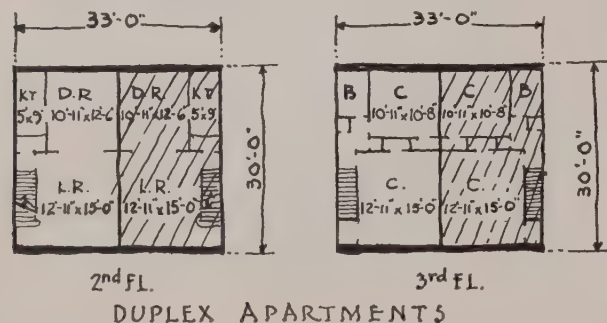
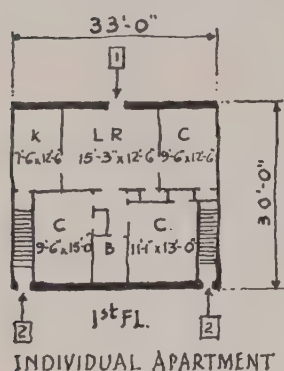
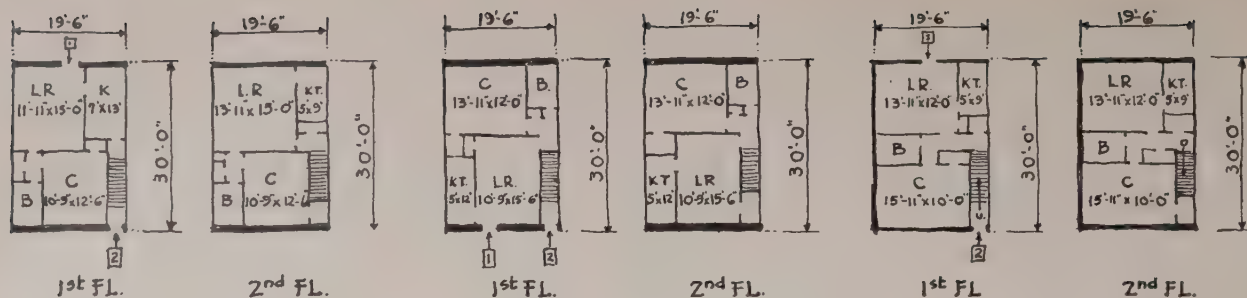
To certain readers a survey such as this may have proved not sufficiently dramatic. We have not taken the city map and boldly crossed it off with a big X with the idea of a "fresh start," entirely revolutionary and "modern." Such plans are generally destined only for paper. And at least we have not fallen into that other trap so inviting to the socially minded, of accepting un-



Above, plan and perspective of a study by Norman N. Rice, providing three exposures through a "crankshaft" grouping of units

Studies by E. H. Klaber, architect, comparing the typical Chicago six-family buildings on 50-foot frontages with (right) a grouping of three-story apartments as row houses





Above, Clarence S. Stein's plans for small two-story flats showing various arrangements of stair and kitchen locations suitable for varying frontages. The two plans at right are for end house in group.

At left and below, a large first-floor flat with two five-room duplexes above.

burning furnace, for instance, eliminates coal delivery, while the automatic refrigerator emancipates us from the ice-cart; dwellings no longer require street frontage. With such resources and such wealth there is no reason beyond our own inertia why we should not be the leaders instead of the laggards in the whole housing enterprise. However, if we permit the merchants and the advertising men to offer these new conveniences as gadgets, or as substitutes for good planning and environment, then we shall miss the fundamental benefits that they may contribute.

The attitude has been taken, throughout this work, that we cannot permit sentiment or pity to blind and divert us from our permanent aims. What benefit is there in "slum clearance" if the method adopted is such that the money is all spent at once and the city further impoverished? Not only can nothing further then be done, but we shall have insured the growth of whole square miles of new slums, where today there is still only controllable blight. The popular general who has won famous victories with a huge loss of men has been a cause of ultimate defeat in many a war. To continue the analogy, the most valuable leader has often been the one who has known how to guard existing costly lines of communication; and such lines of communication are quite literally a main factor in the city's problem. We appear to be entering an epoch not of further expansion but largely of conservation. In those vast areas in our cities which it is actually most economical to rebuild, there is plenty of room for everybody.

But the most ingenious use of the T-square cannot perform miracles to stretch inadequate incomes so as to cover excessive land costs and financing wastes.

If, misled by land speculators, we embark once more either upon riotous expansion or upon mistaken "model-tenement" policies of congestion, we may, as already said, end with not enough people to go around. The group dwelling offers a sane intermediate medium through which to re-establish the urban community.

◀ ARCHITECTURE ▶

challenged the figures laid before them by the land speculators and relying for a solution on the invincible powers of crusading good-will, on the principle, perhaps, that God helps children, fools, and the United States.

It has instead been possible to project new possibilities for modern forms of city housing that find their roots in the past but reach into a more-hopeful future. We have passed in review a consecutive body of experience, where the designers have been given at least a fragmentary opportunity to let reason and imagination release themselves from prejudices and reservations. Under conditions, no matter how limited, of large-scale operations, the designer was able to be something of a modern technician, comparable in dignity and freedom to the technicians in our other arts and sciences.

In the United States we have a peculiar advantage over other countries in seeking liberation from set forms and limited arrangements in that we have developed to an extraordinary degree new structural and service devices. The oil-

THE EIGHTY-SECOND IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS
ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS

ARCHITECTURE'S PORTFOLIO OF ENTRANCE DRIVEWAYS

*Subjects of previous portfolios are listed below
at left and right of page*



*Below are the subjects of
forthcoming Portfolios*

❖1926
DORMER WINDOWS
SHUTTERS AND BLINDS

❖1927
ENGLISH PANELLING
GEORGIAN STAIRWAYS
STONE MASONRY TEXTURES
ENGLISH CHIMNEYS
FANLIGHTS AND OVERDOORS
TEXTURES OF BRICKWORK
IRON RAILINGS
DOOR HARDWARE
PALLADIAN MOTIVES
GABLE ENDS
COLONIAL TOP-RAILINGS
CIRCULAR AND OVAL WINDOWS

❖1928
BUILT-IN BOOKCASES
CHIMNEY TOPS
DOOR HOODS
BAY WINDOWS
CUPOLAS
GARDEN GATES
STAIR ENDS
BALCONIES
GARDEN WALLS
ARCADES
PLASTER CEILINGS
CORNICES OF WOOD

❖1929
DOORWAY LIGHTING
ENGLISH FIREPLACES
GATE-POST TOPS
GARDEN STEPS
RAIN LEADER HEADS
GARDEN POOLS
QUOINS
INTERIOR PAVING
BELT COURSES
KEYSTONES
AIDS TO FENESTRATION
BALUSTRADES

Corbels

SEPTEMBER

Pew Ends

OCTOBER

Gothic Niches

NOVEMBER

Curtain Treatment at
Windows

DECEMBER

Exterior Plasterwork

JANUARY

Church Doors

FEBRUARY

*Photographs showing interesting
examples under any of these head-
ings will be welcomed by the Edi-
tor, though it should be noted that
these respective issues are made up
about six weeks in advance of
publication date.*

1930 ❖
SPANDRELS
CHANCEL FURNITURE
BUSINESS BUILDING ENTRANCES
GARDEN SHELTERS
ELEVATOR DOORS
ENTRANCE PORCHES
PATIOS
TREILLAGE
FLAGPOLE HOLDERS
CASEMENT WINDOWS
FENCES OF WOOD
GOTHIC DOORWAYS

1931 ❖
BANKING-ROOM CHECK DESKS
SECOND-STORY PORCHES
TOWER CLOCKS
ALTARS
GARAGE DOORS
MAIL-CHUTE BOXES
WEATHER-VANES
BANK ENTRANCES
URNS
WINDOW GRILLES
CHINA CUPBOARDS
PARAPETS

1932 ❖
RADIATOR ENCLOSURES
INTERIOR CLOCKS
OUTSIDE STAIRWAYS
LEADED GLASS MEDALLIONS
EXTERIOR DOORS OF WOOD
METAL FENCES
HANGING SIGNS
WOOD CEILINGS
MARQUISES
WALL SHEATHING
FRENCH STONEWORK
OVER-MANTEL TREATMENTS

1933 ❖
BANK SCREENS
INTERIOR DOORS
METAL STAIR RAILINGS
VERANDAS
THE EAGLE IN SCULPTURE
EAVES RETURNS ON MASONRY
GABLES
EXTERIOR LETTERING



Delano & Aldrich



Andrew J. Thomas



Richard H. Marr

Harold Hill Blossom





Richard H. Dana, Jr.; Ellen Shipman

Noël Chamberlain



Rogers & Zogbaum



Peabody, Wilson & Brown

Frederick C. Thomas



On Long Island*Salisbury, England**Delano & Aldrich**Donald D. McMurray*

*Austin Durst,
Wendover, England*



Herman Brookman



Harold Hill Blossom



J. Duncan Forsyth



Rushbrooke Hall, Suffolk



E. C. Bateman, Oxfordshire



Villa del Arcivescovo, near Lucca

Parker, Thomas & Rice



Gordon B. Kaufmann



Pitkin & Mott

Broadway, Worcestershire



Wesley S. Bessell



On Long Island

Smyser-Royer Company





*Delano & Aldrich;
Vitale & Geiffert*

Andrew J. Thomas



*Charles A. Platt;
Pitkin & Mott*



*Bradley Delehanty;
Isabel Pendleton*

*David Adler;
Vitale & Geiffert*



George Washington Smith



J. Lakin Baldrige



Maynicke & Francke



*Alvin E. Harley ;
Vitale & Geiffert*

*Chateau d'Odre,
Pas de Calais*



*Sturry Court (c. 1520),
Canterbury*



Vitale & Geiffert

*Dunn & Copper;
Pitkin & Mott*



*Villa Cetinale,
near Siena*



*Lower Slaughter
Manor, Gloucestershire*



E. P. Mellon



Robert M. Carrère



Penshurst, Kent



Rodgers & Poor

Roland E. Coate

Dwight James Baum





Penshurst, Kent

Willis Polk & Company



Verna Cook Salomonsky



Paul R. Williams

Hinton-on-the-Green, Evesham





*Myron Hunt &
H. C. Chambers*

E. P. Mellon



Pitkin & Mott

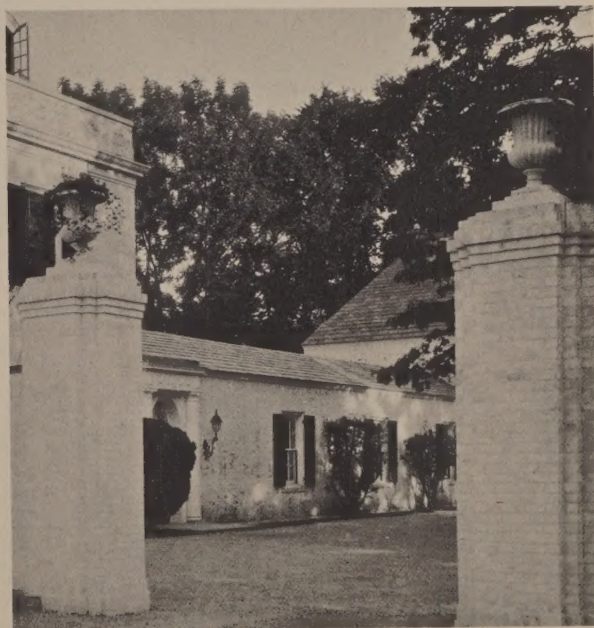


Hunt & Burns

Aymar Embury II



On Long Island



Leigh French, Jr.



J. A. Dempwolf



Reginald D. Johnson



Pitkin & Mott

Morgan, Walls & Clements

Walter C. Pleuthner





BANKERS
TRUST
COMPANY
BUILDING,
NEW YORK
CITY

SHREVE, LAMB
& HARMON,
ARCHITECTS

*From the
rendering by
Hugh Ferriss*